

# DXP DVI Pro DXP HDMI

DVI and HDMI Series  
Digital Matrix Switchers



**Extron Electronics**  
INTERFACING, SWITCHING AND CONTROL

## Safety Instructions • English



This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.



This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product enclosure that may present a risk of electric shock.

### Caution

**Read Instructions** • Read and understand all safety and operating instructions before using the equipment.

**Retain Instructions** • The safety instructions should be kept for future reference.

**Follow Warnings** • Follow all warnings and instructions marked on the equipment or in the user information.

**Avoid Attachments** • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

## Consignes de Sécurité • Français



Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).



Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

### Attention

**Lire les instructions** • Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

**Conservier les instructions** • Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

**Respecter les avertissements** • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

**Eviter les pièces de fixation** • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

## Sicherheitsanleitungen • Deutsch



Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.



Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

### Achtung

**Lesen der Anleitungen** • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits- und Bedienungsanleitungen genau durchlesen und verstehen.

**Aufbewahren der Anleitungen** • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

**Befolgen der Warnhinweise** • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

**Keine Zusatzgeräte** • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

## Instrucciones de seguridad • Español



Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.



Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

### Precaucion

**Leer las instrucciones** • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

**Conservar las instrucciones** • Conservar las instrucciones de seguridad para futura consulta.

**Obedecer las advertencias** • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

**Evitar el uso de accesorios** • No usar herramientas o accesorios que no sean específicamente recomendados por el fabricante, ya que podrían implicar riesgos.

## 安全须知 • 中文



这个符号提示用户该设备用户手册中有重要的操作和维护说明。



这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

### 注意

**阅读说明书** • 用户使用该设备前必须阅读并理解所有安全和使用说明。

**保存说明书** • 用户应保存安全说明书以备将来使用。

**遵守警告** • 用户应遵守产品和用户指南上的所有安全和操作说明。

**避免追加** • 不要使用该产品的厂商没有推荐的工具或追加设备，以避免危险。

## Warning

**Power sources** • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

**Power disconnection** • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

**Power cord protection** • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

**Servicing** • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

**Slots and openings** • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

**Lithium battery** • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer instructions.

## Avertissement

**Alimentations** • Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

**Déconnexion de l'alimentation** • Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

**Protection du cordon d'alimentation** • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

**Réparation-maintenance** • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

**Fentes et orifices** • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

**Lithium Batterie** • Il a danger d'explosion s'il y a un remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandée par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

## Vorsicht

**Stromquellen** • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden.

Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

**Stromunterbrechung** • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stromversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

**Schutz des Netzkabels** • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

**Wartung** • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden.

Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

**Schlitze und Öffnungen** • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

**Lithium-Batterie** • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

## Advertencia

**Alimentación eléctrica** • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearla ni eliminarla.

**Desconexión de alimentación eléctrica** • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

**Protección del cables de alimentación** • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

**Reparaciones/mantenimiento** • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

**Ranuras y aberturas** • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalentamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

**Batería de litio** • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

## 警告

**电源** • 该设备只能使用产品上标明的电源。设备必须使用有地线的供电系统供电。第三条线（地线）是安全设施，不能不用或跳过。

**拔掉电源** • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

**电源线保护** • 妥善布线，避免被踩踏，或重物挤压。

**维护** • 所有维修必须由认证的维修人员进行。设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

**通风孔** • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。不要用任何东西挡住通风孔。

**锂电池** • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂家的建议处理废弃电池。

## FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

The Class A limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

**NOTE:** This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance with FCC emissions limits.

For more information on safety guidelines, regulatory compliances, EMI/EMF compliance, accessibility, and related topics, [click here](#).

## Conventions Used in this Guide

In this user guide, the following are used:

**CAUTION:** A caution indicates a potential hazard to equipment or data.

**NOTE:** A note draws attention to important information.

**TIP:** A tip provides a suggestion to make working with the application easier.

**WARNING:** A warning warns of things or actions that might cause injury, death, or other severe consequences.

Commands are written in the fonts shown here:

```
^ARMerge Scene, ,Op1 scene 1,1 ^B 51 ^W^C
```

```
[01] R0004 00300 00400 00800 00600 [02] 35 [17] [03]
```

```
[Esc]X1 *X17* X20* X23* X21CE ←
```

**NOTE:** For commands and examples of computer or device responses mentioned in this guide, the character “0” is used for the number zero and “O” represents the capital letter “o.”

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 208.132.180.48: bytes=32 times=2ms TTL=32
```

```
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx -t
```

```
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

From the **File** menu, select **New**.

Click the **OK** button.

### Copyright

© 2012 Extron Electronics. All rights reserved.

### Trademarks

All trademarks mentioned in this guide are the properties of their respective owners.



# Contents

---

<b>Introduction</b> .....	<b>1</b>
About this Guide .....	1
About the DXP DVI Pro and DXP HDMI Series Digital Matrix Switchers .....	1
Features.....	2
DXP DVI Pro Series .....	2
DXP HDMI Series.....	2
DXP DVI Pro and DXP HDMI.....	2
Application Diagrams.....	4

---

<b>Installation</b> .....	<b>6</b>
Rear Panels .....	6
Connections .....	9
Ethernet Connection.....	9
RS-232 and RS-422 Remote Connections.....	10

---

<b>Operation</b> .....	<b>11</b>
Definitions .....	11
Front Panel Controls and Indicators.....	12
Input and Output Buttons .....	13
Configuration Port.....	14
Control Buttons .....	14
I/O Buttons .....	16
Button Icons .....	17
Powering On.....	18
Creating a Configuration .....	18
Example 1: Creating a Set of Ties .....	19
Example 2: Adding a Tie to a Set of Video Ties.....	21
Breaking Ties .....	22
Example 3: Removing a Tie from a Set of Ties.....	23
Viewing a Configuration .....	24
Example 4: Viewing Video and Audio, Audio-only, and Video-only Ties .....	25
I/O Grouping.....	28
Example 5: Grouping Inputs and Outputs.....	29
Saving and Recalling Presets.....	32
Example 6: Saving a Preset.....	32
Example 7: Recalling a Preset .....	33
Muting and Unmuting Video and Audio Outputs .....	34
Example 8: Muting and Unmuting an Output.....	35

Locking and Unlocking the Front Panel (Executive Modes).....	37
Selecting Lock Mode 2 or Toggling Between Mode 2 and Mode 0 .....	37
Selecting Lock Mode 2 or Toggling Between Mode 2 and Mode 1 .....	38
Switching from Lock Mode 1 to Lock Mode 0.....	38
Resetting .....	38
Resetting the System from the Front Panel ....	38
Resetting Using the Rear Panel Reset Button .....	39
Setting the Button Background Illumination .....	42
Selecting the RS-232/RS-422 Port Protocol and Baud Rate (Rear Panel).....	42
Troubleshooting.....	43
Configuration Worksheets .....	44
Worksheet Example 1: System Equipment.....	44
Worksheet Example 2: Daily Configuration....	45
Worksheet Example 3: Test Configuration .....	45
Worksheet Form .....	46

---

<b>SIS Configuration and Control</b> .....	<b>47</b>
Serial Ports.....	47
Ethernet Port .....	48
Ethernet Cable.....	48
Default IP Addresses.....	48
Establishing an Ethernet Connection .....	48
Connection Timeouts.....	49
Number of Connections.....	49
Verbose Mode .....	49
Host-to-Switcher Instructions .....	49
Switcher-initiated Messages .....	49
Switcher Error Responses .....	51
Using the Command and Response Tables for SIS Commands .....	51
Special Characters.....	51
SIS Commands for DXP.....	52
Symbol Definitions for DXP .....	52
Command and Response Table for DXP SIS Commands.....	55
IP-specific SIS Commands.....	66
Symbol Definitions for IP-specific Commands.....	66
Command and Response Table for IP-Specific SIS Commands .....	68

---

**Matrix Software ..... 70**

Matrix Switchers Control Program.....	70
Installing the Software .....	70
Software Operation Via Ethernet.....	71
Special Characters.....	71
Using the Software .....	71
Setting Up the Matrix Window.....	74
Managing Ties .....	75
IP Setup .....	77
Updating the Firmware .....	83
Uploading HTML Files .....	85
Window Buttons, Menus, and Trash Can (Right Column) .....	86
Window Menus .....	86
Using Emulation Mode.....	97
Using the Matrix Switcher Help File .....	99
Using the Button Label Generator .....	99

---

**HTML Operation ..... 101**

Accessing the Web Pages.....	101
Special Characters.....	102
System Status Page.....	103
DSVP and HDCP Page .....	104
System Settings Page .....	105
IP Settings Fields .....	106
Date/Time Settings Fields .....	107
Passwords Page.....	108
Email Settings Page.....	109
Firmware Upgrade Page.....	111
Using the File Management Page .....	113
Uploading Files .....	113
Adding a Directory.....	114
Other File Management Activities.....	114
Set and View Ties Page (User Control).....	114
Global Presets Page.....	116

---

**Reference Information..... 117**

Specifications.....	117
Specifications — DXP DVI Pro Series.....	117
Specifications — DXP HDMI Series .....	119
Part Numbers and Accessories.....	122
Included Parts .....	122
Optional Accessories .....	122
Cables and Adapters.....	123
Mounting the Switcher .....	123
UL Guidelines for Rack Mounting.....	123
Rack Mounting Procedure.....	124
Button Labels.....	124
Replacing Button Labels.....	124
IP Addressing.....	127
What is an IP Address?.....	127
Choosing IP Addresses .....	127
Subnet Mask.....	128
Pinging for the IP Address .....	128
Connecting as a Telnet Client.....	129
Subnetting, a Primer .....	131

# Introduction

This section gives an overview of the Extron DXP Series Digital Matrix Switchers, describes significant features of the series, and provides application diagrams.

- [About this Guide](#)
- [About the DXP DVI Pro and DXP HDMI Series Digital Matrix Switchers](#)
- [Features](#)
- [Application Diagrams](#)

## About this Guide

This guide contains installation, configuration, and operating information for the DXP Series Digital Matrix Switchers, including the DXP 44/48/84/88 DVI Pro and the DXP 44/48/84/88 HDMI series.

The terms “DXP,” “switcher,” and “DXP switcher” are used interchangeably in this guide to refer to all DXP models. “DXP DVI Pro” refers to the four DVI Pro models, and “DXP HDMI” refers to the four HDMI models.

## About the DXP DVI Pro and DXP HDMI Series Digital Matrix Switchers

The DXP DVI Pro and DXP HDMI series are high performance, digital matrix switchers. The DVI Pro series route single link DVI-D signals (up to eight) and the DXP HDMI series route HDMI signals from multiple sources to any DVI- or HDMI-equipped display devices. All DXP matrix switchers support resolutions of up to 1920x1200 and HDTV 1080p/60.

The DVI Pro and HDMI models are HDCP compliant, enabling simultaneous distribution of a single source signal to one or more compliant displays.

The following matrix sizes are available:

### **DXP DVI Pro Series:**

- DXP 44 DVI Pro: 4 inputs by 4 outputs
- DXP 48 DVI Pro: 4 inputs by 8 outputs
- DXP 84 DVI Pro: 8 inputs by 4 outputs
- DXP 88 DVI Pro: 8 inputs by 8 outputs

### **DXP HDMI Series:**

- DXP 44 HDMI: 4 inputs by 4 outputs
- DXP 48 HDMI: 4 inputs by 8 outputs
- DXP 84 HDMI: 8 inputs by 4 outputs
- DXP 88 HDMI: 8 inputs by 8 outputs

All three series provide easy integration in applications that require reliable DVI Pro or HDMI signal routing. They include several convenience features that are common to most Extron matrix switchers, such as the QuickSwitch Front Panel Controller (QS-FPC™), global presets, IP Link®, and Ethernet control.

All models feature automatic cable equalization for all inputs and automatic re-clocking for each output. These features reduce the need for additional signal conditioning equipment by compensating for weak source signals or signal loss when you are using long input cable assemblies.

The DXP matrix switchers can be operated via the front panel, RS-232 and RS-422 serial control, and IP Link Ethernet control. Optional Extron X-Y remote control panels are also available to operate the DXP switcher remotely.

## Features

### DXP DVI Pro Series

- **Inputs and outputs on DVI-I connectors**
- **HDMI signal support** — Full support of embedded HDMI audio signals when optional Extron HDMI-to-DVI adapters are used. Audio carried in the HDMI stream is switched with the video but not removed or decoded from the data stream.
- **Automatic cable equalization** for each input to 100 feet (30.4 m) at 1920x1200 when the DXP is used with Extron DVI cables

### DXP HDMI Series

- **Inputs and outputs on HDMI connectors**
- **DVI signal support** — Full support of DVI signals when optional Extron DVI-to-HDMI adapters are used. Audio carried in the DVI stream is switched with the video but not removed or decoded from the data stream.
- **Automatic cable equalization** for each input to 100 feet (30.4 m) at 1920x1200 when the DXP is used with Extron HDMI cables

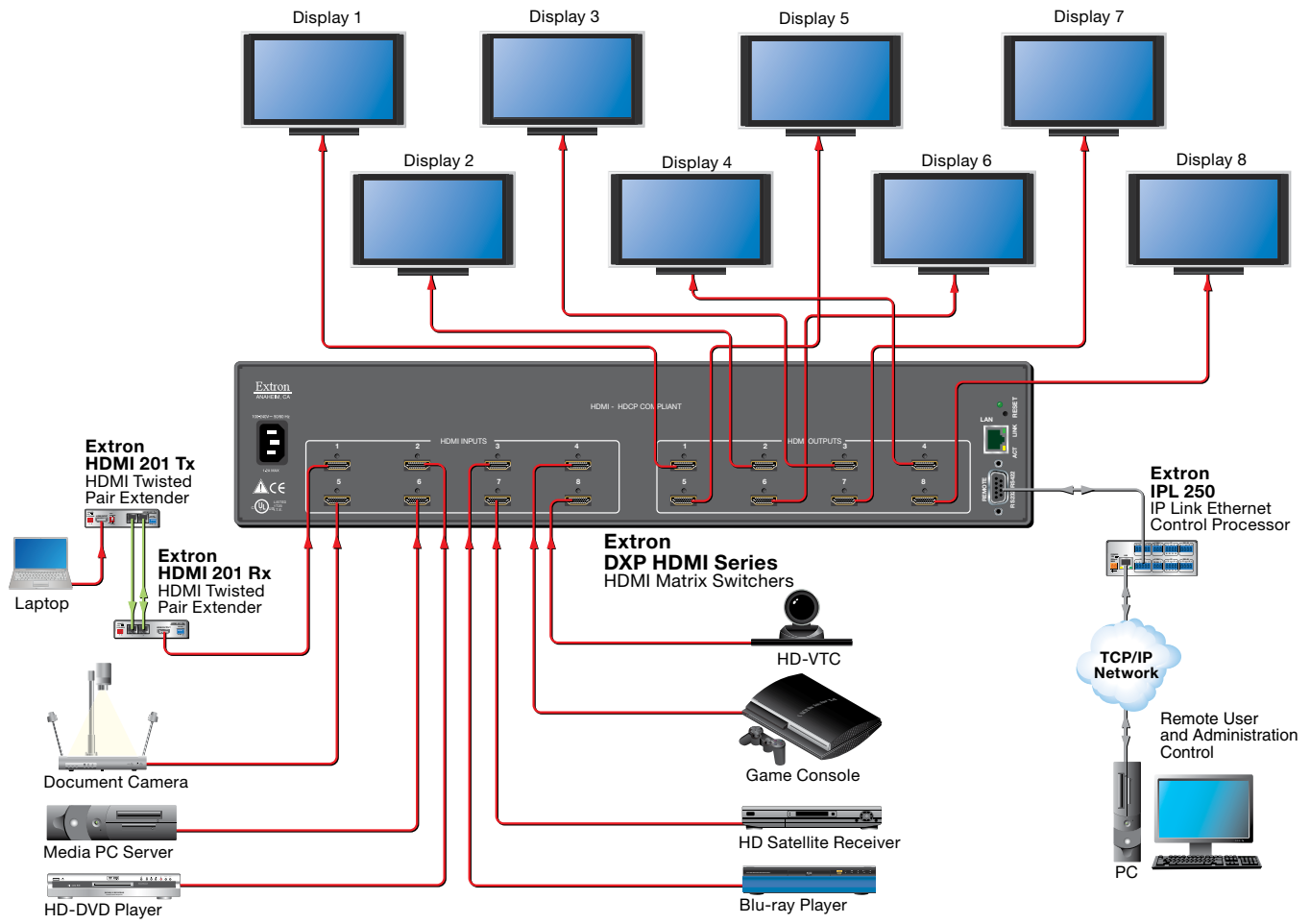
### DXP DVI Pro and DXP HDMI

All DXP series feature the following:

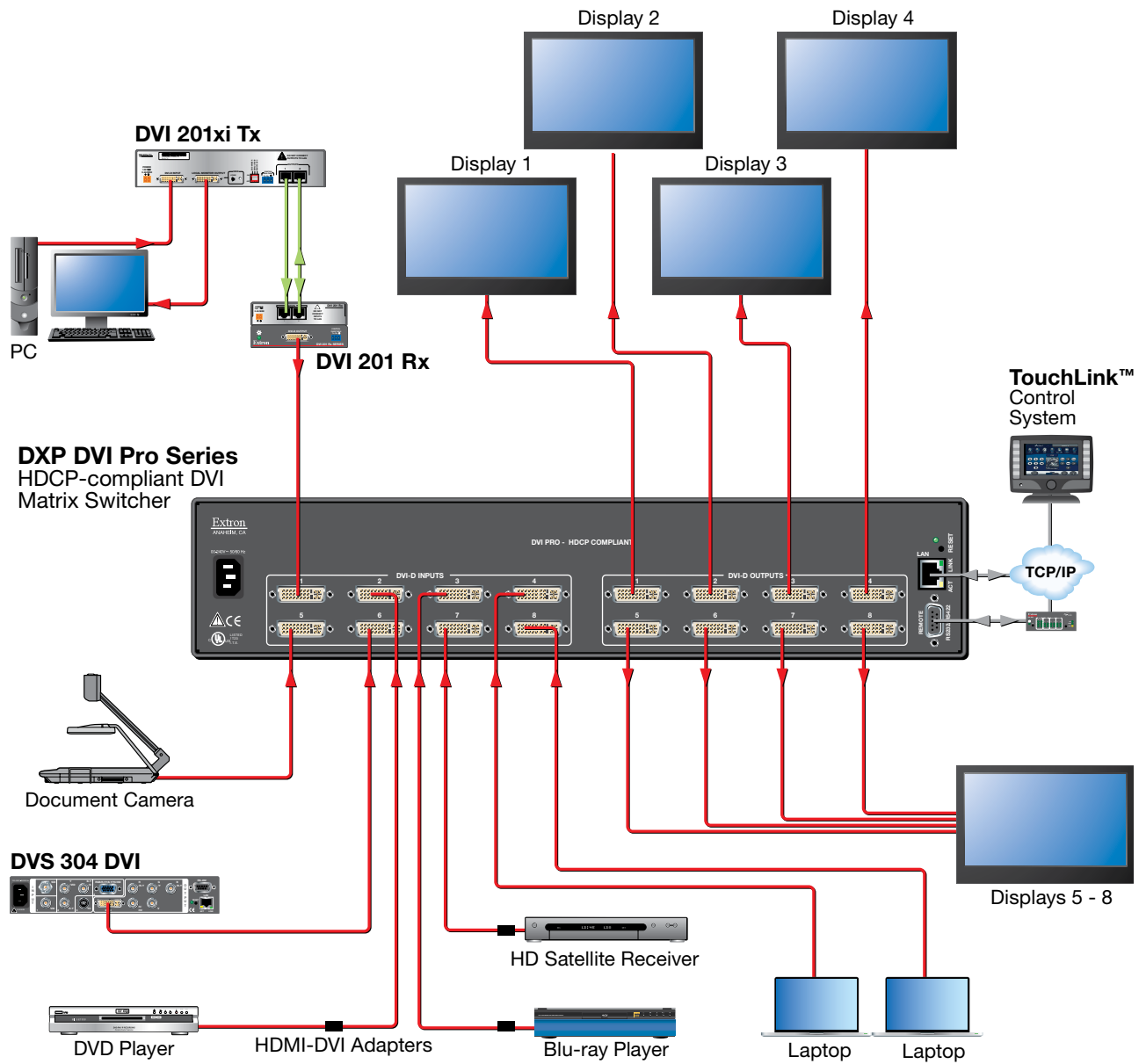
- **HDMI standard support** — Both DXP series support HDMI specification features, including data rates up to 6.75 Gbps, Deep Color, Lip Sync, and HD lossless audio formats.
- **Automatic output re-clocking** — Automatic output re-clocking stabilizes data to correct pair skew and restore signal integrity for improved performance. Signals are reshaped and the timing is restored to allow for transmission over long cables.
- **Power for external devices** — +5 VDC, 250 mA power is available on the outputs for external peripheral devices.
- **EDID reference** — Extended display identification data (EDID) files let you direct computer sources to stored EDID files that define resolution and refresh rates, or to the EDID of a connected monitor to specify what resolution to output. User assigned EDID files are also available, allowing the EDID of Output 1 to be manually assigned to any input.
- **1.65 Gbps digital data rate** — The DXP can switch all digital data (DVI and HDMI standard) and supports carriage of embedded audio, ancillary data, and the ID information of the data stream.
- **DDC transmission support** — DDC channels are actively buffered, allowing pass-through of EDID and HDCP information between source and display.

- **Audio breakaway** — An embedded audio signal can be separated from its corresponding video signal within the switcher, allowing the audio and video signals from one source to be switched to different destinations
- **32 global presets** — Frequently used I/O configurations can be saved and recalled as global presets either from the front panel, IP Link, or serial control. This allows I/O configurations to be set up and stored in memory for future use.
- **I/O mode viewing** — Users can easily view which inputs and outputs are actively connected.
- **QuickSwitch Front Panel Controller (QS-FPC)** — The DXP front panels provide a discrete button for each input and output.
- **Tri-color back-lit buttons** — The front panel buttons illuminate red, green, or amber, depending on function, for ease of use in low-light environments, and can be custom labeled for easy identification.
- **IP Link Ethernet control** — The DXP matrix switchers can be monitored and managed over a LAN, WAN, or the Internet, using standard TCP/IP protocols. IP Link provides for remote selection of I/O ties, EDID configuration, and monitoring system status.
- **RS-232 and RS-422 control** — Using serial commands issued from the rear panel Remote RS232/RS422 port or the front panel 2.5 mm TRS Config port, you can control and configure the DXP switchers via the included Matrix Switchers Control Program, or integrate the switchers into a control system. Firmware updates can also be installed via this port.
- **Simple Instruction Set (SIS™) commands** — The Extron SIS consists of a set of basic ASCII code commands that easy programming through a control system via an RS-232 or RS-422 connection.
- **Control software** — For RS-232, RS-422, and Ethernet remote control via a computer, the Matrix Switchers Control Program is provided with the DXP switcher. This icon-driven software uses a graphical, drag-and-drop interface to provide easy I/O configuration and other customization. The control software also offers an emulation mode for configuration of an offsite switcher; the configuration can then be saved for future downloading to the switcher.
- **Optional remote control** — Available as an option is the MKP 2000 or MKP 3000 X-Y Remote Control Panel, which can be connected via Ethernet or to the Remote RS232/RS422 port, providing the flexibility to control a DXP matrix switcher from a remote location.
- **Front panel security lockout** — Front panel lockout (executive mode) prevents unauthorized use in non-secure environments. In lockout mode, a special button combination is required to unlock operation of the switcher from the front panel.
- **Rack-mountable 2U, full rack width metal enclosure**
- **Internal universal power supply** — The 100-240 VAC, 50-60 Hz, international power supply provides worldwide power compatibility.
- **High-bandwidth Digital Content Protection (HDCP) compliance** — The DXP switchers provide continuous authentication with HDCP-compliant input and output devices to ensure quick and reliable switching in professional AV environments. This enables simultaneous distribution of a single source signal to one or more displays. The DXP switchers support full matrix switching of digital signals with HDCP for copy protection of digital television broadcasts and high resolution digital video output from DTV tuners, DVRs, and Blu-ray Disc players.

# Application Diagrams



**Figure 1.** Application Diagram for a DXP 88 HDMI



**Figure 2.** Application Diagram for a DXP 88 DVI Pro



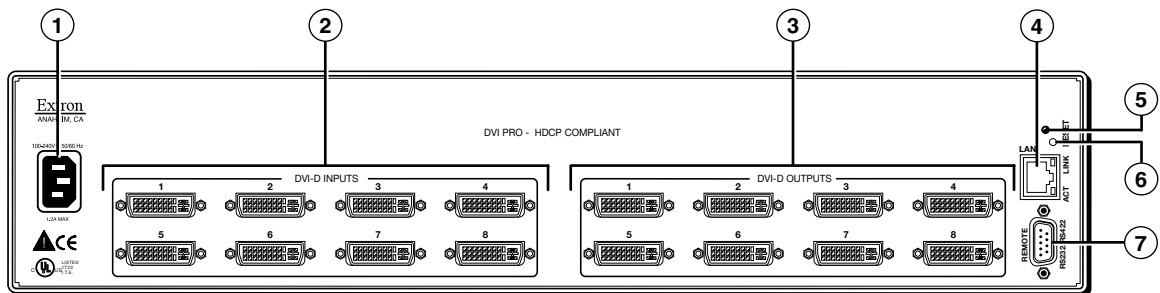
# Installation

This section describes the rear panels of the DXP switchers and provides instructions for cabling. It covers the following topics:

- **Rear Panels**
- **Connections**

## Rear Panels

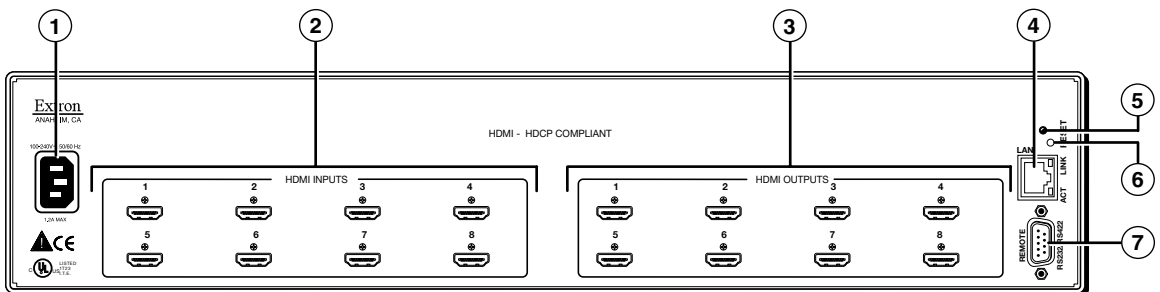
Most of the connectors are on the rear panels of the DXP switchers. The following figures show the rear panels of a DVI model and an HDMI model.



**Figure 3.** DXP 88 DVI Pro Rear Panel

**NOTES:** The illustration above shows a **DXP 88 DVI Pro**, with **eight** DVI input and **eight** DVI output connectors. The rear panels of the other DVI Pro models are identical to this model except for the number of inputs and outputs:

- **DXP DVI Pro 84** – 8 inputs and 4 outputs
- **DXP DVI Pro 48** – 4 inputs and 8 outputs
- **DXP DVI Pro 44** – 8 inputs and 4 outputs



**Figure 4.** DXP 88 HDMI Rear Panel

**NOTE:** The illustration on the previous page shows a **DXP 88 HDMI**, with **eight** HDMI input connectors and **eight** HDMI output connectors. The rear panels of the other three DXP HDMI models are identical to this model except for the number of inputs and outputs:

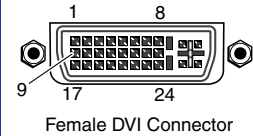
- **DXP HDMI 84** – 8 inputs and 4 outputs
- **DXP HDMI 48** – 4 inputs and 8 outputs
- **DXP HDMI 44** – 4 inputs and 4 outputs

① **AC power connector** — Plug a standard IEC power cord into this connector to connect the switcher to a 100 VAC to 240 VAC, 50-60 Hz power source.

② **Input connectors** —

- **DVI Pro series:** Connect DVI-D source devices to these female 29-pin DVI-I input connectors. Only single-link DVI-D signals are supported.

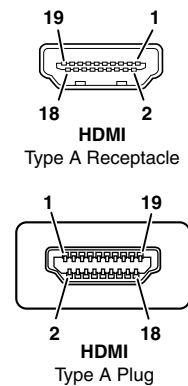
Pin	Signal	Pin	Signal	Pin	Signal
1	TMDS data 2-	9	TMDS data 1-	17	TMDS data 0-
2	TMDS data 2+	10	TMDS data 1+	18	TMDS data 0+
3	TMDS data 2/4 shield	11	TMDS data 1/3 shield	19	TMDS data 0/5 shield
4	Not used	12	Not used	20	Not used
5	Not used	13	Not used	21	Not used
6	DDC clock	14	+5 V power	22	TMDS clock shield
7	DDC data	15	Ground	23	TMDS clock+
8	Not used	16	Hot plug detect	24	TMDS clock-



**Figure 5. DVI Connector Pin Assignments**

- **HDMI series:** Connect HDMI source devices to these female 19-pin type A HDMI input connectors.

Pin	Signal	Pin	Signal	Pin	Signal
1	TMDS data 2+	7	TMDS data 0+	13	CEC
2	TMDS data 2 shield	8	TMDS data 0 shield	14	Reserved (NC on device)
3	TMDS data 2-	9	TMDS data 0-	15	SCL
4	TMDS data 1+	10	TMDS clock+	16	SDA
5	TMDS data 1 shield	11	TMDS clock shield	17	DDC/CEC ground
6	TMDS data 1-	12	TMDS clock-	18	+5 V power
				19	Hot plug detect



**Figure 6. HDMI Connector Pin Assignments**

**NOTE:** LockIt® cable lacing brackets, one for each HDMI input and output connector, are provided with the DXP HDMI. These brackets can be used to secure the HDMI cables to the DXP connectors to reduce stress on the HDMI connectors and prevent signal loss due to loose cable connections.

For information on attaching the LockIt brackets, see the *LockIt HDMI Lacing Bracket Installation Guide* card, available on the Extron website at [www.extron.com](http://www.extron.com).

③ **Output connectors** —

- **DVI Pro series:** Connect DVI output devices to these female 29-pin DVI-I output connectors.
- **HDMI series:** Connect HDMI output devices to these female 19-pin type A HDMI output connectors.

**NOTE:** The switchers do not alter the video signal in any way. The signal that is output by the switcher is in the same format as the input signal.

- ④ **Ethernet port** — If desired, connect the DXP switcher to a computer or to an Ethernet LAN via this RJ-45 connector. You can use a computer to control the networked switcher with SIS commands from a remote location. You can also control the switcher from a PC that is either running the Matrix Switchers Control Program or via the HTML pages that are pre-loaded on the switcher (see “[Ethernet Connection](#)” on the next page).



**Ethernet connection indicators** — The Link and Act LEDs indicate the status of the Ethernet connection. The green Link LED indicates that the switcher is properly connected to an Ethernet LAN. This LED should light steadily. The amber Act (Activity) LED indicates transmission of data packets on the RJ-45 connector. This LED should flicker as the switcher communicates.

- ⑤ **Reset LED** — When the unit is being reset, this LED blinks the appropriate number of times to indicate the level of reset that has been performed.
- ⑥ **Reset button** — This recessed button initiates four levels (modes) of reset on the DXP switcher. To initiate the different reset levels, use a pointed object such as a small Philips screwdriver or a stylus to press and hold the button while the switcher is running or while it is being powered up (see “[Resetting](#)” on page 38 for more information).
- ⑦ **Remote RS232/RS422 connector** — Connect a host device, such as a computer, touch panel control, or RS-232 capable PDA to the switcher via this 9-pin D connector for serial RS-232 and RS-422 control (see “[RS-232 and RS-422 Remote Connections](#)” on page 10).

## Connections

**WARNING:** Remove power from the system before making any connections.

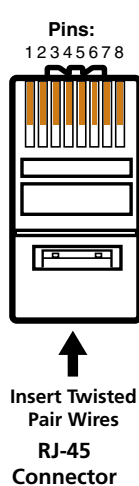
**CAUTION:** Use Electrostatic discharge precautions (be electrically grounded) when making connections. Electrostatic discharge (ESD) can damage equipment, although you may not feel, see, or hear it.

### Ethernet Connection

When connecting a computer to the DXP Ethernet port, it is vital that you use the correct Ethernet cables, and that they be properly terminated with the correct pinout. Ethernet links use Category (CAT) 3, 5e, or 6 unshielded twisted pair (UTP) or shielded twisted pair (STP) cables, terminated with RJ-45 connectors. Ethernet cables are limited to a length of 328 feet (100 m).

**NOTES:**

- Do not use standard telephone cables. Telephone cables do not support Ethernet or Fast Ethernet.
- Do not stretch or bend the cables, because this can cause transmission errors.



**Crossover Cable**

Pin	End 1 Wire Color	End 2 Wire Color
1	White-green	White-orange
2	Green	Orange
3	White-orange	White-green
4	Blue	Blue
5	White-blue	White-blue
6	Orange	Green
7	White-brown	White-brown
8	Brown	Brown

**T568A**

**T568B**

A cable that is wired as T568A at one end and T568B at the other (Tx and Rx pairs reversed) is a "crossover" cable.

**Straight-through Cable**

Pin	End 1 Wire Color	End 2 Wire Color
1	White-orange	White-orange
2	Orange	Orange
3	White-green	White-green
4	Blue	Blue
5	White-blue	White-blue
6	Green	Green
7	White-brown	White-brown
8	Brown	Brown

**T568B**

**T568B**

A cable that is wired the same at both ends is called a "straight-through" cable because no pin or pair assignments are swapped.

**Figure 7. RJ-45 Connector and Pinout Tables**

The cable used depends on your network speed. The switcher supports both 10 Mbps (10Base-T — Ethernet) and 100 Mbps (100Base-T — Fast Ethernet), half-duplex and full-duplex, Ethernet connections.

- 10Base-T Ethernet requires CAT 3 UTP or STP cable at minimum.
- 100Base-T Fast Ethernet requires CAT 5e UTP or STP cable at minimum.

The Ethernet cable must be properly terminated for your application as either a crossover or a straight-through cable.

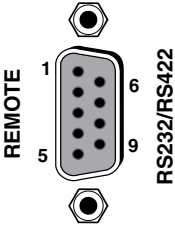
- **Crossover cable** — Direct connection between the computer and the DXP switcher
- **Patch (straight-through) cable** — Connection of the DXP to an Ethernet LAN

## RS-232 and RS-422 Remote Connections

The DXP switchers have two serial ports through which the DXPs can be configured via SIS commands (serial commands that control the switcher through this connector).

### Remote RS232/RS422 port (rear panel)

The following figure shows the pin assignments for the Remote RS232/RS422 connector.



Pin	RS-232	Function	RS-422	Function
1	—	Not used	—	Not used
2	Tx	Transmit data	Tx-	Transmit data (-)
3	Rx	Receive data	Rx-	Receive data (-)
4	—	Not used	—	Not used
5	Gnd	Signal ground	Gnd	Signal ground
6	—	Not used	—	Not used
7	—	Not used	Rx+	Receive data (+)
8	—	Not used	Tx+	Transmit data (+)
9	—	Not used	—	Not used

**Figure 8.** Remote RS232/RS422 Connector Pin Assignments

See the “[SIS Configuration and Control](#)” section, starting on page 47, for definitions of the SIS commands and the “[Matrix Software](#)” section, starting on page 70, for details on how to install and use the control software.

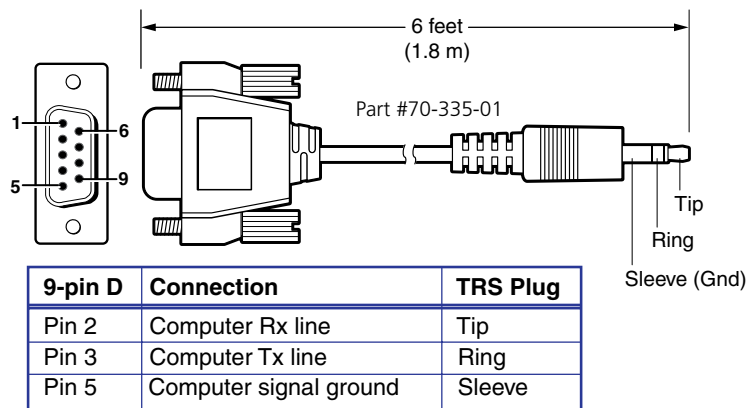
- NOTES:**
- The switcher can support either the RS-232 or RS-422 serial communication protocol, and operate at 9600, 19200, 38400, or 115200 baud rate.
  - See “[Selecting the RS-232/RS-422 Protocol and Baud Rate \(Rear Panel\)](#)” on page 42 to configure this port using the front panel buttons.

If desired, you can connect an MKP 2000 or MKP 3000 remote control panel to this port. See the user guide of either product for details.

### RS-232 Config port (front panel)

The Config port is an additional RS-232 connector, located on the front panel. A host device can be connected to this port for serial RS-232 control only. Protocol for the port is the same as for the rear panel Remote RS232/RS422 port: 9600 baud, 8 data bits, 1 stop bit, no parity, and no flow control.

An optional 2.5 mm cable (Extron part number 70-335-01) can be used to connect the DXP to your computer. The figure below shows the pin assignments for this cable.



**Figure 9.** 2.5 mm Connector Cable for the Configuration Port

# Operation

This section describes the DXP front panel controls and the procedures for configuring and operating the DXP switchers. Topics include:

- **Definitions**
- **Front Panel Controls and Indicators**
- **Powering On**
- **Creating a Configuration**
- **Viewing a Configuration**
- **I/O Grouping**
- **Saving and Recalling Presets**
- **Muting and Unmuting Video and Audio Outputs**
- **Locking and Unlocking the Front Panel (Executive Modes)**
- **Resetting**
- **Setting the Button Background Illumination**
- **Selecting the RS-232/RS-422 Port Protocol and Baud Rate (Rear Panel)**
- **Troubleshooting**
- **Configuration Worksheets**

## Definitions

The following terms, which apply to Extron digital matrix switchers, are used throughout this guide:

- **Tie** — An input-to-output connection
- **Set of ties** — An input tied to two or more outputs. (An output can never be tied to more than one input.)
- **Configuration** — One or more ties or sets of ties
- **Current configuration** — The configuration that is currently active in the switcher (also called configuration 0)
- **EDID (Extended Display Identification Data)** — Resolution, refresh rate, and pixel clock information for a display device. This information is stored in memory at system power-up and each time a new display device is connected. The EDID is then made available to be assigned to any input.
- **Global memory preset** — A configuration that has been stored. Up to 32 global presets can be stored in memory. Preset locations are assigned to the input buttons and (where necessary) output buttons. All models have 32 presets available from the front panel and through RS-232, RS-422, or Ethernet.

When a preset is retrieved from memory, it becomes the **current configuration**.

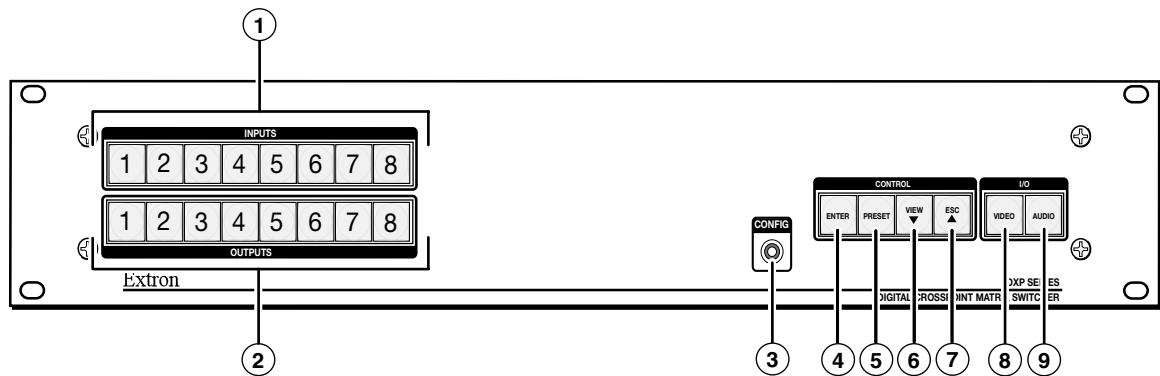
- **Room** — A subset of outputs that are logically related to each other, as determined by the operator. The switchers support up to 10 rooms, each of which can consist of 1 to 16 outputs. Each room can have up to 10 presets.
- **Room memory preset** — A configuration consisting of outputs in a single room that has been stored. When a room preset is retrieved from memory, it becomes the current configuration for the outputs assigned to that room only (none of the other outputs are affected).

## Front Panel Controls and Indicators

All models of the DXP have the same front panel with the same controls and layout. The front panel buttons are grouped into two sets, with the input and output buttons located on the left side of the control panel and the control buttons on the right.

These illuminated push buttons can be labeled with text or graphics. You can set the buttons to have amber background illumination all the time, or you can disable the illumination (see “[Setting the Button Background Illumination](#)” on page 42). Depending on the operation, the buttons blink or light steadily when pressed.

The front panel buttons have multiple functions. In the descriptions on the following pages, primary functions are preceded by a square (◻) and secondary functions are preceded by a bullet (•).



**Figure 10.** DXP Switchers Front Panel



## Input and Output Buttons

Each DXP model has the same number of input buttons as output buttons, regardless of how many inputs and outputs it actually has. On models with four inputs or outputs, buttons 5 through 8 behave like buttons 1 through 4, selecting inputs or outputs 1 through 4. The following table summarizes the button functions.

Primary Functions			
	<b>1</b>	<b>2</b>	<b>3</b> through <b>8</b>
<b>Action:</b>	Select an input or output for the tie being created.		
<b>Indications:</b>	<b>Blinking:</b> potential tie or untie <b>Lit:</b> current tie <b>Amber:</b> video and audio tie <b>Green:</b> video only tie <b>Red:</b> audio only tie		
Secondary Functions			
<b>I/O Grouping</b>	<b>Action 1:</b>	<b>Input 1 and Output 1:</b> Select an I/O group mode.	
	<b>Action 2/ indication:</b>	Assign an input or output to the selected group. <b>Lit:</b> The input or output is assigned to the selected group.	
<b>Presets</b>	<b>Action/ indication:</b>	Select a preset in preset mode. <b>Lit:</b> A preset has already been saved to this location. <b>Blinking:</b> The preset location is selected to be saved.	
<b>Mutes</b>	<b>Action/ indication:</b>	<b>Outputs:</b> Press and hold to mute the video, audio, or video and audio output. <b>Outputs, blinking:</b> The output is muted.	
<b>Background illumination</b>	<b>Action:</b>	Press input buttons 1 and 2 to toggle between background illumination and unlit buttons.	

① **Input buttons** — The input buttons do the following:

**Primary functions (□):**

- Select an input.
- Identify the selected input.

**Secondary functions (●):**

- **Input 1 only:** With the Output 1 button, place the switcher in I/O grouping mode (see “[I/O Grouping](#)” on page 28).
- Select a global preset (see “[Saving and Recalling Presets](#)” on page 32).
- **Inputs 1 and 2 only:** Toggle button background illumination on and off (see “[Setting the Button Background Illumination](#)” on page 42).

② **Output buttons** — The output buttons do the following:

**Primary functions (□):**

- Select outputs.
- Identify the selected outputs.

**Secondary functions (●):**





- Select a global preset (see “[Saving and Recalling Presets](#)” on page 32).
- **Output 1 only:** With the Input 1 button, places the switcher in I/O grouping mode (see “[I/O Grouping](#)” on page 28).
- Mute and unmute an output (see “[Muting and Unmuting Video and Audio Outputs](#)” on page 34).

**Configuration Port**

- ③ **Config port** — This RS-232 port is an alternative to the Remote RS232/RS422 connector on the DXP rear panel (see “[Rear Panels](#)” on page 6 for a description). The port (RS-232 only) can be used for system configuration and control via SIS commands or the control software. To connect to the Config port, see “[RS-232 and RS-422 Remote Connections](#)” on page 10.

**Control Buttons**

The following table summarizes the primary and secondary functions of the four control buttons.

Primary Functions					
					
<b>Action:</b>		Save changes.	Select preset mode.	Select view mode.	Cancel or escape.
<b>Indication:</b>		<b>Blink:</b> Save needed	<b>Blink:</b> Save preset. <b>Lit:</b> Recall preset.	View the selected mode.	Flashes once.
Secondary Functions					
<b>I/O Grouping</b>	<b>Action/indication:</b>	Select group 1.	Select group 2.	Select group 3.	Select group 4.
<b>Port configuration</b>	<b>Action 1:</b>	<b>Select Configuration Mode</b>			
	<b>Action 2/indication:</b>	Select 9600 baud. <b>Blink:</b> Selected	Select 19200 baud. <b>Blink:</b> Selected	Select 38400 baud. <b>Blink:</b> Selected	Select 115200 baud. <b>Blink:</b> Selected
<b>Front panel locks</b>	<b>Action:</b>	With Video and Audio, select lock mode 2 or toggle between modes 0 and 2.			

- ④ **Enter button** — The Enter button does the following:

**Primary functions (□):**

- Saves changes that you make on the front panel.
- Indicates that a potential tie has been created but not saved.
- Indicates that a global preset has been selected to be saved or recalled but that the preset action has not been accomplished.

### Secondary functions (●):

- In I/O grouping mode, selects group 1 (see “[I/O Grouping](#)” on page 28).
- In I/O grouping mode, indicates that group 1 is selected.
- With the Preset, View ▼, and Esc ▲ buttons, places the switcher in serial port configuration mode (see “[Selecting the RS-232/RS-422 Protocol and Baud Rate \(Rear Panel\)](#)” on page 42).
- Selects 9600 baud for the Remote RS232/RS422 and the RS-232 Config ports in serial port configuration mode.
- Indicates that the Remote RS232/RS422 and the RS-232 Config ports are set to 9600 baud in serial port configuration mode.

⑤ **Preset button** — The Preset button does the following:

### Primary functions (□):

- Places the switcher in preset saving mode to save a configuration as a preset, and in preset recalling mode to activate a previously-defined preset.
- Blinks when the DXP is in preset saving mode and lights steadily when the switcher is in preset recalling mode.

### Secondary functions (●):

- In I/O grouping mode, selects group 2.
- In I/O grouping mode, indicates that group 2 is selected.
- With the Enter, View ▼, and Esc ▲ buttons, places the switcher in serial port configuration mode.
- Selects 19200 baud for the Remote RS232/RS422 and the RS-232 Config ports in serial port configuration mode.
- Indicates that the Remote RS232/RS422 and the RS-232 Config ports are set to 19200 baud in serial port configuration mode.

⑥ **View ▼ button** — The View ▼ button does the following:

### Primary functions (□):

- Places the switcher in view-only mode to display the current configuration.

**NOTE:** View-only mode also provides a way to mute and unmute outputs (see “[Muting and Unmuting Video and Audio Outputs](#)” on page 34).

- Indicates that the DXP is in view-only mode.

### Secondary functions (●):

- In I/O grouping mode, selects group 3.
- In I/O grouping mode, indicates that group 3 is selected.
- With the Enter, Preset, and Esc ▲ buttons, places the switcher in serial port configuration mode.
- Selects 38400 baud for the Remote RS232/RS422 and the RS-232 Config ports in serial port configuration mode.
- Indicates that the Remote RS232/RS422 and the RS-232 Config ports are set to 38400 baud in serial port configuration mode.

⑦ **Esc ▲ button** — The Esc ▲ button does the following:

**Primary functions (□):**

- Cancels operations or selections in progress and resets the front panel button indicators.

**NOTE:** The **Esc ▲** button does **not** reset the current configuration or any presets.



- Indicates that the escape function has been activated (flashes once).

**Secondary functions (●):**

- In I/O grouping mode, selects group 4 (see “**I/O Grouping**” on page 28).
- In I/O grouping mode, indicates that group 4 is selected.
- With the Enter, Preset, and View ▼ buttons, selects serial port configuration mode (see “**Selecting the RS-232/RS-422 Protocol and Baud Rate (Rear Panel)**” on page 42).
- Selects 115200 baud for the Remote RS232/RS422 and the RS-232 Config ports in serial port configuration mode.
- Indicates that the Remote RS232/RS422 and the RS-232 Config ports are set to 115200 baud in serial port configuration mode.

## I/O Buttons

You must select video, audio, or both before creating or viewing a tie or a configuration. This is done by pressing the Video button (⑦) or the Audio button (⑧).

Primary Functions			
			
<b>Action/indication:</b>		Select or deselect video. Green when selected	(DXP DVI Pro and HDMI models only) Select or deselect audio. Red when selected
Secondary Functions			
<b>Front panel locks</b>	<b>Action 1:</b>	With Enter, select lock mode 2 or toggle between mode 0 and mode 2.	
	<b>Action 2:</b>	Select lock mode 1 or toggle between lock modes 1 and 2.	
<b>Resets</b>	<b>Action:</b>	Perform a system reset.	
<b>Port configuration</b>	<b>Action/indication:</b>	<b>Blink:</b> Selected	Select RS-232.
		<b>Blink:</b> Selected	Select RS-422.

⑧ **Video button** — The Video button does the following:

**Primary function (□):**

- Selects and deselects video for a configuration that is being created or viewed, and lights green to indicate that video is available for configuring or for viewing.

**Secondary functions (●):**

- With the Enter button and Audio button, selects between front panel locks (lock mode 2 and lock mode 0) (see “**Locking and Unlocking the Front Panel (Executive Modes)**” on page 37).
- With the Audio button, selects between front panel lock types (lock mode 2 and lock mode 1).
- With the Audio button, initiates system reset from the front panel (see “**Resetting the System from the Front Panel**” on page 38).
- Selects the RS-232 protocol for the rear panel Remote RS232/RS422 port in serial port selection and configuration mode and indicate the selection (see “**Selecting the RS-232/RS-422 Protocol and Baud Rate (Rear Panel)**” on page 42).

⑨ **Audio button** — (DXP DVI Pro and DXP HDMI only) The Audio button does the following:

**Primary function (□):**

- Selects and deselects audio for a configuration that is being created or viewed and lights red to indicate that audio is available for configuring or for viewing.

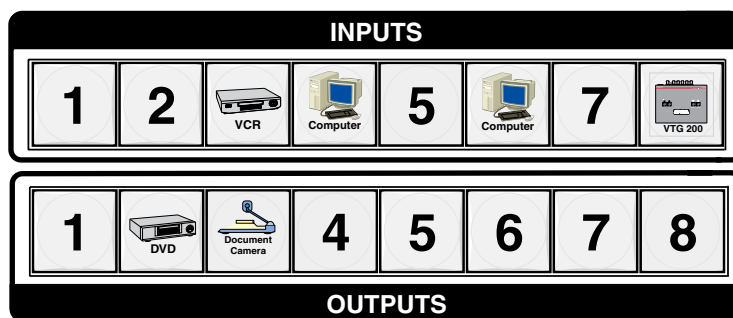
**Secondary functions (●):**

- With the Enter button and the Video button, selects between front panel locks (lock mode 2 and lock mode 0).
- With the Video button, selects between front panel locks (lock mode 2 and lock mode 1).
- With the Video button, commands the front panel system reset.
- Selects the RS-422 protocol for the rear panel Remote RS232/RS422 port in serial port selection and configuration mode and indicate the selection.
- Flashes to indicate that the Remote RS232/RS422 port is set to the RS-422 protocol when the DXP is in Serial Port Configuration mode.

## Button Icons

You can temporarily remove the numbered translucent covers on the input and output pushbuttons to insert labels behind the covers.

Input and output labels can be created easily with the Extron Button Label Generator software, which is provided with every Extron matrix switcher. Each input and output button can be labeled with names, alphanumeric characters, or color bitmaps. See the “**Matrix Software**” section, starting on page 70, for details on using the labeling software. See “**Button Labels**” on page 124 for blank labels and the procedure for removing and replacing the translucent covers.



**Figure 11.** Example of Button Labels on a DXP Front Panel

## Powering On

Apply power by connecting the provided IEC power cord to the rear panel IEC connector and to an AC source. The switcher performs a self-test that flashes the front panel button indicators red, green, and amber and then turns them off. An error-free power-up self-test sequence leaves all I/O and control buttons either unlit or showing background illumination. The lit or unlit status of the Video and Audio buttons remains the same as it was when the switcher was previously powered off.

The current configuration, EDID information, and all presets are saved in memory. When power is applied, the most recent configuration is retrieved. The previous presets remain intact.

If an error occurs during the self-test, the DXP locks up and does not operate. If this occurs, call the Extron S3 Sales & Technical Support Hotline (see the rear cover for [contact information](#) in your area).

## Creating a Configuration

A configuration consists of one or more inputs, each tied to a set of one or more outputs.

**NOTE:** While an input can be tied to multiple outputs, an output can be tied to only one input.

This section contains the steps to follow to create or change a configuration. The following subsections contain some examples of configurations that can be created on the DXP, and instructions for setting them up. The illustrations show the DXP 88; however, the procedures apply to all DXP models.

To create a configuration:

1. Press the Esc ▲ button to clear any input, output, or control button indicators that may be lit.
2. Select to configure video, audio, or both by pressing the Video and Audio buttons (ⓑ and ⓓ in figure 10).
3. Select the desired input and outputs by pressing the input and output buttons (ⓐ and ⓑ in figure 10).
  - The input buttons light one of the following colors:
    - **Amber:** Video and audio ties
    - **Green:** Video only ties
    - **Red:** Audio only ties
  - Output buttons light or blink one of the following colors:
    - **Amber:** Video and audio ties
    - **Green:** Video only ties
    - **Red:** Audio only ties
  - To indicate **potential ties**, output buttons **blink** in the appropriate color when an input is selected.
  - To indicate **current ties**, output buttons **light steadily** in the appropriate color when an input is selected.
  - To clear unwanted outputs, press and release the associated lit output buttons. To indicate **potential unties**, output buttons **blink** the appropriate color when an output is deselected (muted) but not untied from the input.

4. Press and release the Enter button to accept the tie or to break an existing tie.
5. Repeat steps 1 through 4 to create or clear additional ties until the desired configuration is complete.

- NOTES:**
- Only one input can be tied to an output. If you tie an input to an output that is already tied to another input, the older tie is broken in favor of the newer tie.
  - If an input with no tie is selected, only the button for the selected input lights (no output buttons light).
  - If you press the input button for an I/O grouped input and then try to select an output in a different group, the associated output button cannot be selected, and the selected input button remains lit (see “**I/O Grouping**” on page 28 for more information).
  - As each input and output is selected, the associated output button blinks the appropriate color to indicate a tentative tie. Buttons for outputs that were already tied to the input light the appropriate color steadily. Outputs that are already tied can be left on, along with new blinking selections, or toggled off by pressing the associated output button.
  - When the Video and Audio buttons are lit, if an input with an audio tie but no video tie is selected, the selected input button lights amber and the output button lights the appropriate color (red, green, or amber).

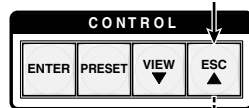
### Example 1: Creating a Set of Ties

In the following example, input 5 is tied to outputs 3, 4, and 8. The steps show the front panel indications that result from your action.

**NOTE:** This example assumes that there are no ties in the current configuration.

1. Press and release the Esc ▲ button.

Press the Esc button to clear all selections.

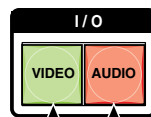


The button flashes once.

**Figure 12. Clear all Selections**

2. To select video and audio for the tie, press and release the Video and Audio buttons as necessary until both the buttons light.

**NOTE:** Because the DXP DVI series switchers do not support audio, you cannot create audio ties. Pressing the Audio button has no effect.



Press the Video button to toggle on and off. Press the Audio button to toggle on and off.

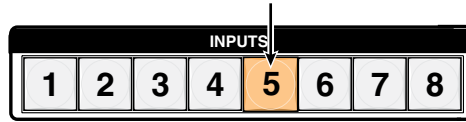
The button lights **green** when selected. The button lights **red** when selected.

**Figure 13. Select Video and Audio**



- Press and release the Input 5 button.

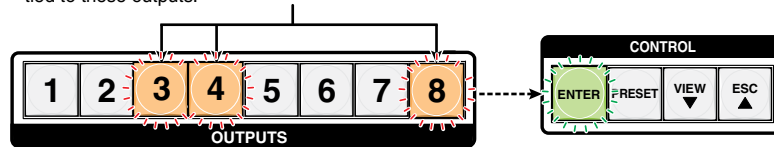
Press and release the Input 5 button.  
The button lights **amber**.



**Figure 14. Select Input 5**

- Press and release the Output 3, Output 4, and Output 8 buttons.

Press and release the Output 3, Output 4, and Output 8 buttons.  
The buttons blink **amber** to indicate that the selected input will be tied to these outputs.



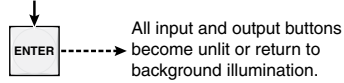
The Enter button blinks green to indicate the need to confirm the change.

**Figure 15. Select the Outputs**

**NOTE:** You can cancel the entire set of ties at this point by pressing and releasing the Esc ▲ button. The Esc ▲ button flashes red once.

- Press and release the Enter button.

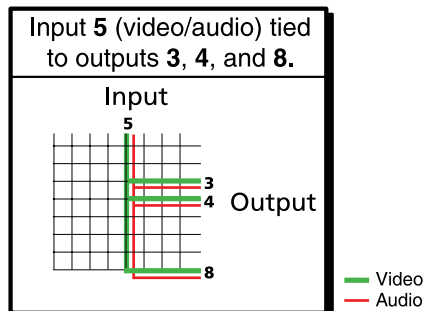
Press the Enter button to confirm the configuration change.



The Enter button becomes unlit or returns to background illumination.

**Figure 16. Press Enter to Confirm the Tie**

The configuration now is **input 5 video and audio tied to output 3, output 4, and output 8.**



**Figure 17. Example 1, Final Configuration**

## Example 2: Adding a Tie to a Set of Video Ties

In the following example, a new tie is added to the current configuration. The illustrations show the front panel indications that result from your actions.

**NOTE:** This example assumes that you have performed example 1.

1. Press and release the Esc ▲ button.

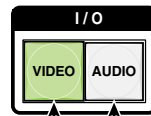
Press the Esc button to clear all selections.



The button flashes once.

**Figure 18. Clear All Selections**

2. To select only video for the tie, press and release the Video and Audio buttons as necessary until the Video button is lit and the Audio button is off.



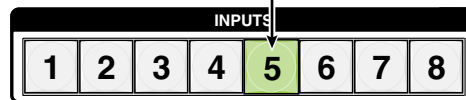
Press the Video button to toggle video on. Press the Audio button to toggle audio off.

The button lights **green** when selected. The button is **unlit** or **background illuminated** when deselected.

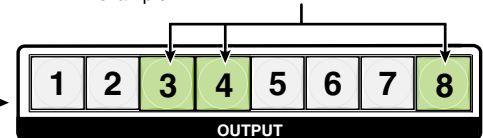
**Figure 19. Select Video Only**

3. Press and release the Input 5 button.

Press and release the Input 5 button.  
The button lights **green** to indicate that video outputs can be tied to or untied from this input.



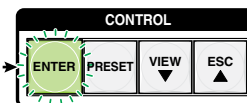
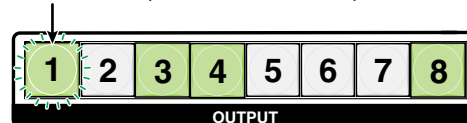
The Output 3, Output 4, and Output 8 buttons light green to indicate the video ties created in example 1.



**Figure 20. Select an Input with Ties**

4. Press and release the Output 1 button.

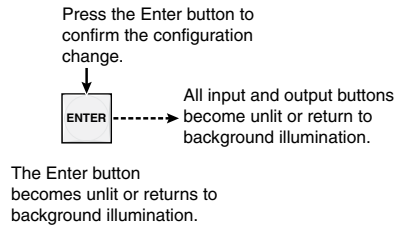
Press and release the Output 1 button.  
The button blinks **green** to indicate that the selected video input will be tied to this output.



The Enter button blinks **green** to indicate the need to confirm the change.

**Figure 21. Select an Additional Output**

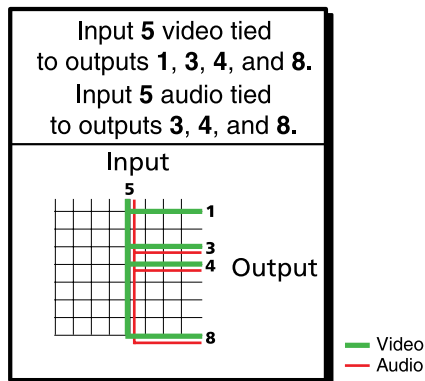
5. Press and release the Enter button.



**Figure 22. Confirm the Tie**

The configuration now is:

- **Input 5 video tied to output 1, output 3, output 4, and output 8**
- **Input 5 audio tied to output 3, output 4, and output 8**



**Figure 23. Example 2, Final Configuration**

## Breaking Ties

To undo an existing I/O tie:

1. Press the I/O button (Video, Audio, or both) for the type of tie you want to break.
2. Press the input button whose tie you want to dissolve. The input button and its tied output buttons light red, green, or amber, depending on your selection in step 1 and on the types of ties the selected input currently has.
3. Press the desired lit output button. The selected output button and the Enter button start to blink.
4. Press the Enter button. The selected input and output buttons and the Enter button become unlit, and the tie is broken.

**Example 3: Removing a Tie from a Set of Ties**, on the next page, lets you practice this procedure.

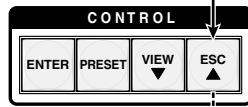
### Example 3: Removing a Tie from a Set of Ties

In the following example, an existing tie is removed from the current configuration. The steps show the front panel indications that result from your action.

**NOTE:** This example assumes that you have performed examples 1 and 2.

1. Press and release the Esc ▲ button.

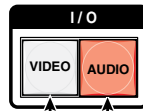
Press the Esc button to clear all selections.



The button flashes once.

**Figure 24. Clear All Selections**

2. To select only audio for the tie, press and release the Video and Audio buttons as necessary until the Audio button is lit and the Video button is off.

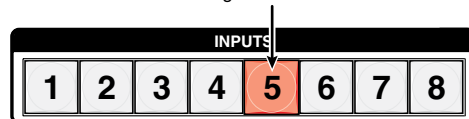


Press the Video button to toggle video off. The button is **unlit** or **background illuminated** when deselected. Press the Audio button to toggle Audio on. The button lights **red** when selected.

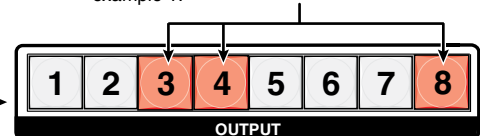
**Figure 25. Select Audio Only**

3. Press and release the input 5 button.

Press and release the Input 5 button. The button lights **red**.



The Output 3, Output 4, and Output 8 buttons light **red** to indicate the audio ties created in example 1.

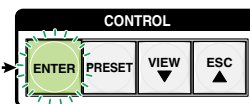
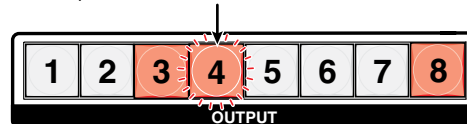


The Output 1 button does not light green to indicate the tie created in example 2 because that tie is **video** only.

**Figure 26. Select an Input**

4. Press and release the Output 4 button.

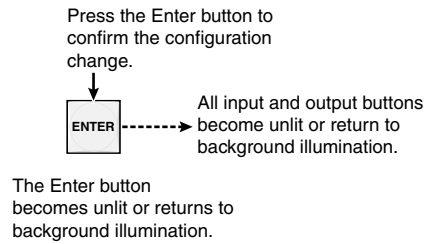
Press and release the Output 4 button. The button blinks **red** to indicate the pending change: **audio** input will be untied.



The Enter button blinks **green** to indicate the need to confirm the change.

**Figure 27. Deselect the Output**

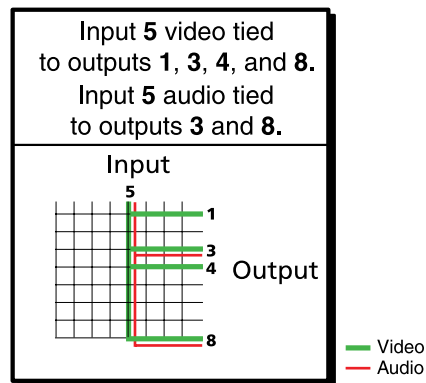
5. Press and release the Enter button.



**Figure 28. Confirm the Tie Removal**

The configuration now is:

- **Input 5 video tied to output 1, output 3, and output 8**
- **Input 5 audio tied to output 3 and output 8**
- **Input 5 video and audio tied to output 3 and output 8**



**Figure 29. Example 3, Final Configuration**

## Viewing a Configuration

You can view the current set of video and audio ties using the front panel buttons. The view-only mode prevents inadvertent changes to the current configuration. View-only mode also provides a way to mute outputs (see "[Muting and Unmuting Video and Audio Outputs](#)" on page 34).

View the current configuration as follows:

1. Press the Esc button to clear any remaining input, output, or control button selections.
2. Press and release the View button. All output buttons that are **not** tied light as follows:
  - **Amber:** No tied video or audio input
  - **Green:** No tied video input
  - **Red:** No tied audio input
3. Select video, audio, or both to view by pressing the Video and Audio buttons.

4. Select the desired input or outputs whose ties you wish to view by pressing the input and output buttons.

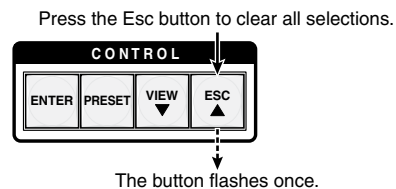
- NOTES:**
- When you place the DXP in **view-only** mode, all output buttons without ties light. Likewise, when you press an output button with no ties, all other output buttons without ties light.
  - To see all ties of the current configuration, press and release each input and output button, one at a time, with the Video and Audio buttons lit.
  - In view-only mode, you can view video and audio, video-only, or audio-only ties. Pressing and releasing the Video or Audio button toggles each selection on and off.
  - When you view video and audio ties, the Video button is lit green and the Audio button is lit red. After you select an input or output, the output buttons light as follows, indicating if audio is broken away:
    - **Amber:** Video and audio ties
    - **Green:** Video only ties
    - **Red:** Audio only ties
  - After 30 seconds of front panel inactivity, the switcher exits view-only mode.

#### Example 4: Viewing Video and Audio, Audio-only, and Video-only Ties

In the following example, we view the video and audio, audio-only, and video-only ties in the current configuration. The steps show the front panel indications that result from your action.

**NOTE:** This example assumes that you have performed examples 1, 2, and 3.

1. Press and release the Esc button.

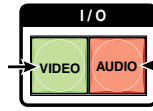


**Figure 30. Clear All Selections**

2. Press and release the View button to put the switcher in view-only mode. The View button lights red.

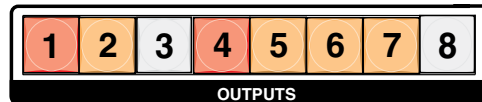
- To select both video and audio for viewing, press and release the Video and Audio buttons as necessary until both are lit.

Press the Video button to toggle video on and off. The button lights **green** when selected.



Press the Audio button to toggle audio on and off. The button lights **red** when selected.

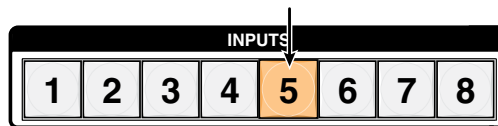
Until you select an input, the buttons for all **untied** outputs light **amber** if **no video or audio inputs** are tied, **green** if **no video inputs** are tied (only audio is tied), or **red** if **no audio inputs** are tied (only video is tied).



**Figure 31. Select Video and Audio**

- Press and release the Input 5 button.

Press and release the Input 5 button. The button lights **amber**.



The output buttons for outputs that **are** tied to Input 5 light the appropriate color:

- **Amber** for **audio and video** ties (audio follow)
- **Green** for **video** ties (video breakaway)
- **Red** for **audio** ties (audio breakaway)

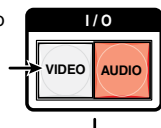


The buttons for outputs that are **not** tied to Input 5 are either unlit or background illuminated.

**Figure 32. Select an Input to View**

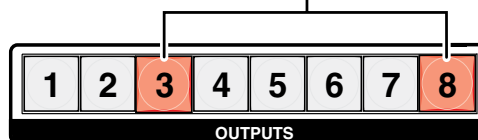
- Press and release the Video button to deselect video.

Press the Video button to deselect it. The button is unlit or background illuminated when deselected.



The Audio button remains lit **red** to indicate that only **audio** is selected.

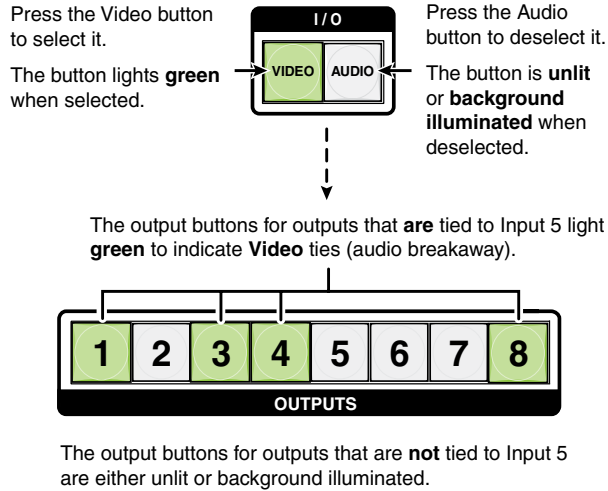
The output buttons for outputs that **are** tied to Input 5 light or blink **red** to indicate **audio** ties (audio breakaway).



The output buttons for outputs that are **not** tied to Input 5 are either unlit or background illuminated.

**Figure 33. Deselect Video to View Only Audio Ties**

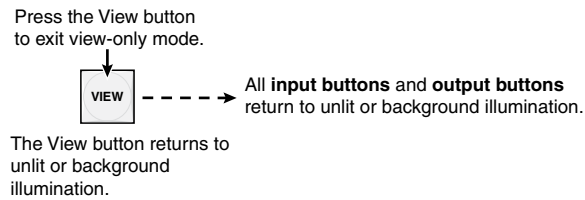
6. Press and release the Video button to toggle it to green and the Audio button to toggle it to either unlit or background-illuminated.



**Figure 34. Deselect Audio and Select Video to View Only Video Ties**

If video ties are established for input 5, the output buttons light green for all video outputs tied to input 5. If no ties are established for input 5, all output buttons return to either unlit or background illumination.

7. Press and release the View button to exit view-only mode.



**Figure 35. Press the View Button to Exit View-only Mode**

**NOTE:** You can also view a set of ties by selecting a tied output. To demonstrate this:

1. Note the number of a lit output button.
2. Press and release the unlit or background-illuminated button for an untied output. Observe that the buttons for all of the untied outputs light.
3. Press the output button that you noted previously and observe that the selected output button, the tied input button (Input 5), and the output buttons light for all of the outputs that are tied to the input.

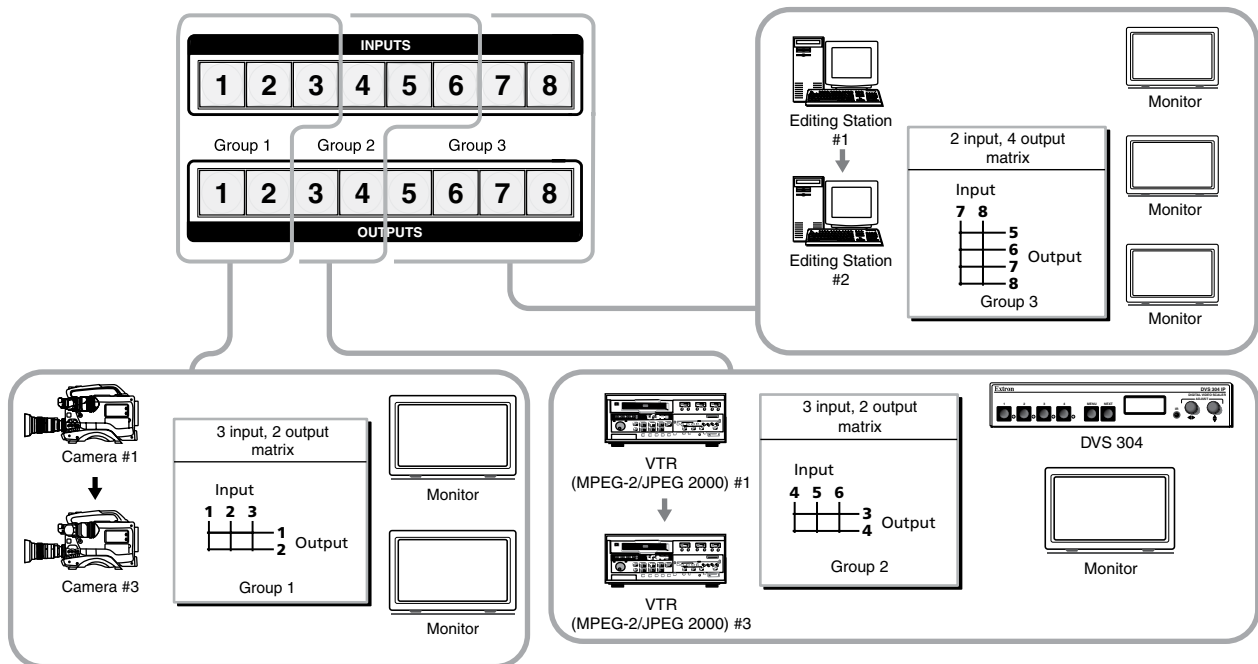


## I/O Grouping

I/O grouping is a matrix switcher feature that allows you to subdivide the front panel control of the matrix into four smaller functional sub-switchers. Inputs and outputs can be assigned to one of four groups or not assigned to any group.

When you are creating ties on the front panel, inputs and outputs that are assigned to a group can be tied only to other outputs and inputs within the same group. For example, you cannot tie an input that is assigned to group 1 to an output that is assigned to group 2. Ungrouped inputs and outputs can be switched to outputs and inputs in any group. Ties between groups (for example, an input in group 1 tied to an output in group 2) **can** be created via SIS commands, the control software, or the web pages.

Figure 36 gives an example of input and output grouping of DVI Pro and HDMI devices on a DXP.



**Figure 36. I/O Grouping of Incompatible Video Formats**

Suggested applications for the I/O grouping feature include:

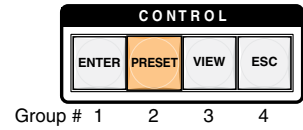
- Segregating specific video formats to prevent an input in one video format from being inadvertently applied to an output device that supports another video format (see figure 36).
- Segregating input and output devices that are in separate rooms.
- Isolating video from being displayed on specific output devices for operational security purposes.

I/O groups can be set up using the front panel, SIS commands via RS-232 or RS-422 control (see the “**SIS Configuration and Control**” section, starting on page 47), the embedded web pages (see the “**HTML Operation**” section, starting on page 101), or the Matrix Switchers Control Program via RS-232, RS-422, or IP control (see the “**Matrix Software**” section starting on page 70). To set up I/O groups using the front panel:

1. Press the Esc button to clear any input, output, or control buttons that may be lit.
2. To enter I/O group mode, press and **hold** the Input 1 and Output 1 buttons simultaneously until the buttons light to indicate the ungrouped inputs and outputs, then release the buttons.

3. Press and release one of the control buttons to select a group:

- Press the Enter button to select group 1.
- Press the Preset button to select group 2 (shown at right).
- Press the View button to select group 3.
- Press the Esc button to select group 4.



4. Select the desired inputs and outputs to assign to the group by pressing their buttons.

5. Press and release the Video and Audio buttons to exit I/O group mode, or allow the mode to time out after approximately 30 seconds.

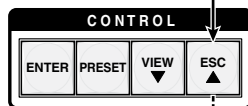
- NOTES:**
- Ties between groups (for example, an input in group 1 tied to an output in group 2) can be created under RS-232/RS-422 or Ethernet control.
  - Ties that existed before I/O groups were created to include them remain in effect, even if they include inputs and outputs in different groups.
  - Presets that tie inputs and outputs across group boundaries can be created under serial or Ethernet control. These presets are selectable from the front panel.
  - An input or output can be assigned to only one group. If an input or output is already assigned to a group and you assign it to a different group, the older grouping is discarded in favor of the new grouping.
  - You can break audio away from the video for a given input or output that are assigned to different groups by pressing the Video or Audio button after you select I/O group mode (between steps 2 and 3, above) to isolate the video or audio.
  - Audio breakaway across different groups can be confusing when you are operating the front panel. Breakaway grouping is not displayed by the Matrix Switchers Control Program, HTML pages, or SIS commands and is not recommended (after they are created, breakaway ties are displayed).
  - For I/O groups to function, at least two groups must be created.
  - I/O groups are protected when front panel lock mode 2 is selected. You can view the groups in lock mode 2, but you cannot change them from the front panel (see "[Locking and Unlocking the Front Panel \(Executive Modes\)](#)," on page 37).

## Example 5: Grouping Inputs and Outputs

In the following example, several switcher inputs and outputs are assigned to groups. The steps show the front panel indications that result from your action.

1. Press and release the Esc button.

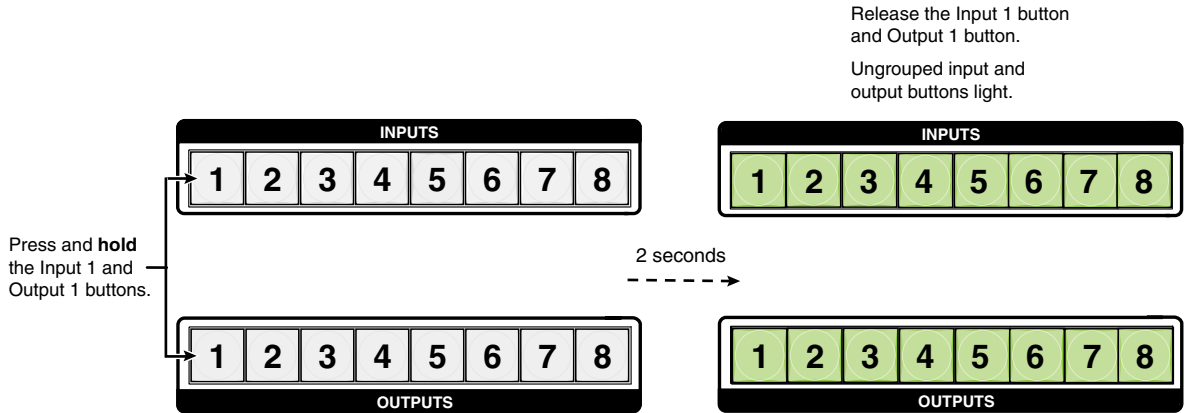
Press the Esc button to clear all selections.



The button flashes once.

**Figure 37. Clear All Selections**

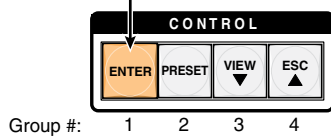
- To enter I/O group mode, press and **hold** the Input 1 and Output 1 buttons until all buttons that are not grouped light green (approximately 2 seconds).



**Figure 38. Select I/O Group Mode**

- Press and release the Enter button to select group 1.

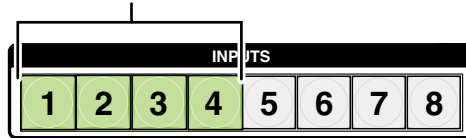
Press and release the Enter button to select group 1.  
The button lights to indicate the selection.



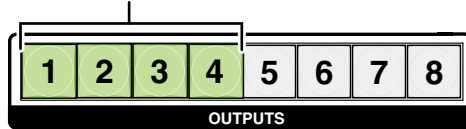
**Figure 39. Select I/O Group 1**

- Press and release the desired input and output buttons.

Press and release the Input 1 through Input 4 buttons.  
The selected buttons light.



Press and release the Output 1 through Output 4 buttons.  
The selected buttons light.

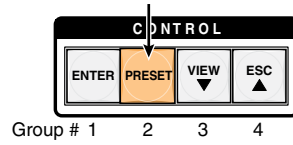


**Figure 40. Assign Inputs and Outputs to Group 1**

- NOTES:**
- I/O groups are protected when front panel lock mode 2 is selected. You can view the groups in lock mode 2, but you cannot change them from the front panel (see **“Locking and Unlocking the Front Panel (Executive Modes)”** on page 37).
  - If front panel lock mode 2 is selected and you try to perform this step, the button presses are ignored and the Enter, Video, and Audio buttons flash.

5. Press and release the Preset button to select group 2.

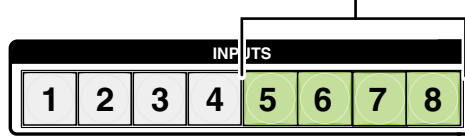
Press and release the Preset button to select group 2.  
The button lights to indicate the selection.



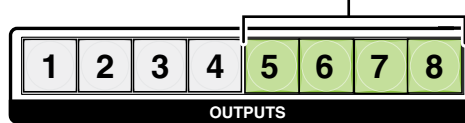
**Figure 41. Select I/O Group 2**

6. Press and release the desired input and output buttons.

Press and release the Input 5 through Input 8 buttons.  
The selected buttons light.

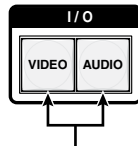


Press and release the Output 5 through Output 8 buttons.  
The selected buttons light.



**Figure 42. Assign Inputs and Outputs to Group 2**

7. Simultaneously press and release the Video and Audio buttons to exit I/O group mode.



Press and release both buttons.

**Figure 43. Deselect I/O Group Mode**

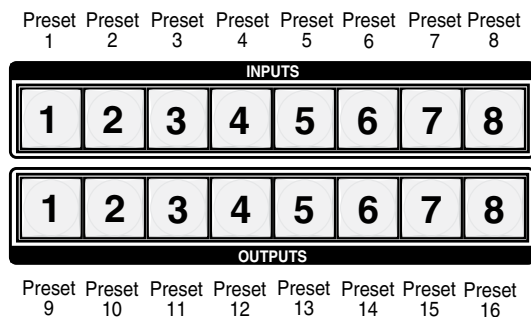
**NOTE:** If you do not press any front panel buttons for approximately 30 seconds, the front panel times out and the switcher exits I/O group mode.

- Group 1 consists of inputs and outputs 1 through 4.
- Group 2 consists of inputs and outputs 5 through 8.

## Saving and Recalling Presets

The current configuration (0) can be saved as a preset in any one of 32 preset memory addresses. Preset locations are assigned to the input buttons and (where necessary) output buttons. Up to 32 presets can be selected from the front panel to be either saved or retrieved. When a preset is retrieved from memory, it becomes the **current configuration**.

- NOTES:**
- Presets cannot be viewed from the front panel unless recalled as the current configuration. Presets can be viewed using the Matrix Switchers Control program (see the “**Matrix Software**” section, starting on page 70, for more details).
  - The current configuration and all presets are stored in non-volatile memory. When power is removed and restored, the current configuration is still active and all presets are retained.
  - When a preset is recalled, it replaces the current configuration, which is lost unless it is also stored as a preset. The recalled preset overwrites all of the current configuration ties in favor of the preset ties.
  - All models have 32 presets; however, only up to 16 presets (the number of front panel buttons) can be selected from the front panel. Preset numbers greater than 16 can be accessed under serial port or Ethernet control.



**NOTE:** Presets 17 through 32 are available via RS-232/RS-422 and Ethernet control only.

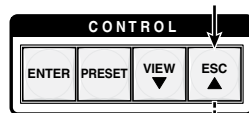
**Figure 44. Preset Locations for All DXP Models**

### Example 6: Saving a Preset

In the following example, the current configuration is saved as a preset. The steps show the front panel indications that result from your action.

1. Press and release the Esc button.

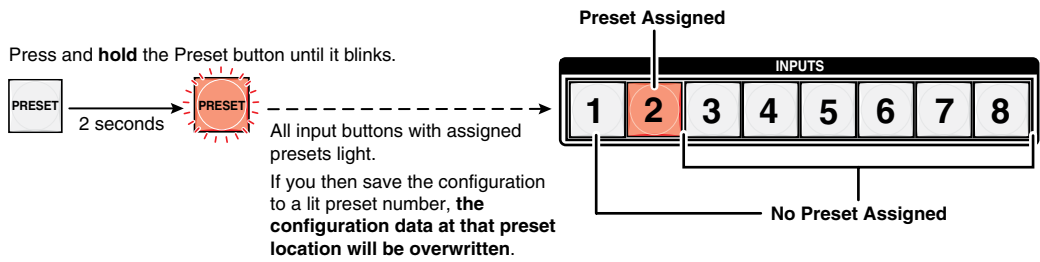
Press the Esc button to clear all selections.



The button flashes once.

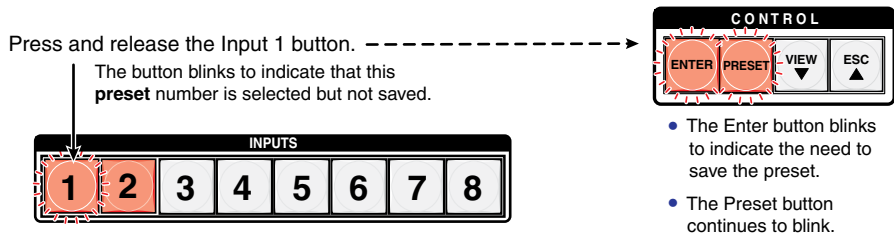
**Figure 45. Clear All Selections**

2. Press and **hold** the Preset button until it blinks (approximately 2 seconds).



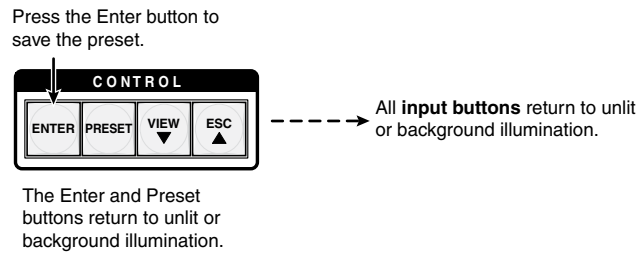
**Figure 46. Enter Save Preset Mode**

3. Press and release the input or output button for the desired preset.



**Figure 47. Select the Preset**

4. Press and release the Enter button. The current configuration is now stored in the selected memory location.

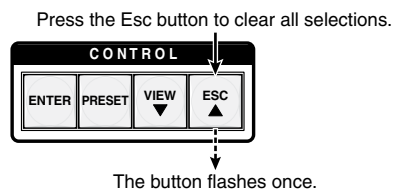


**Figure 48. Press the Enter Button**

## Example 7: Recalling a Preset

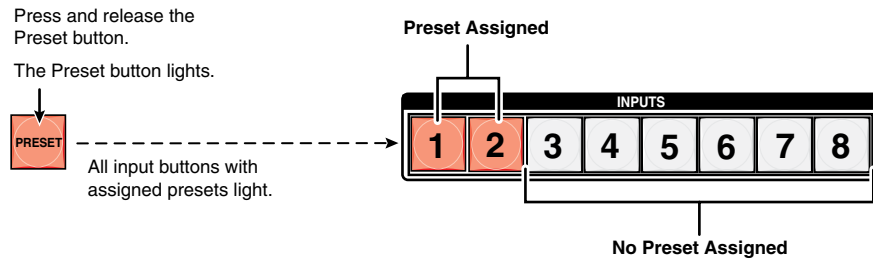
In the following example, a preset is recalled to become the current configuration. The steps show the front panel indications that result from your action.

1. Press and release the Esc button.



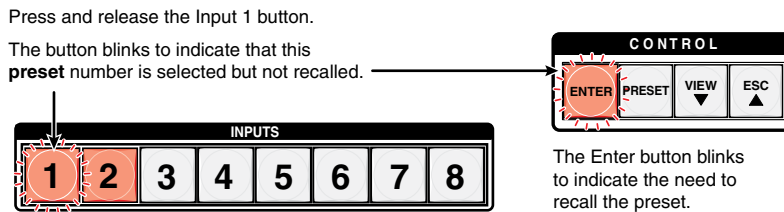
**Figure 49. Clear All Selections**

2. Press and release the Preset button.



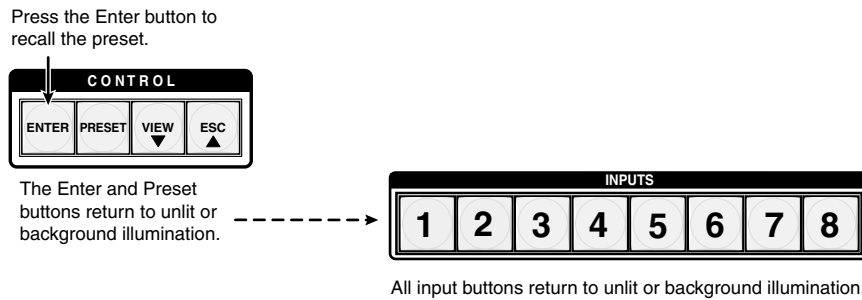
**Figure 50. Enter Recall Preset Mode**

3. Press and release the input or output button for the desired preset.



**Figure 51. Select the Preset**

4. Press and release the Enter button. The configuration stored in the selected memory location is now the current configuration and can be viewed in view-only mode.



**Figure 52. Press the Enter button**

## Muting and Unmuting Video and Audio Outputs

Individual outputs can be muted or unmuted as follows:

- NOTES:**
- Mutes are protected when front panel lock mode 2 is selected. You can view the status of the output (muted or unmuted) in lock mode 2 but you cannot change it from the front panel (see [“Locking and Unlocking the Front Panel \(Executive Modes\)”](#) on page 37).
  - To enable changes to the mute settings, set the lock mode to 0.

1. Press the Esc button to clear any input, output, or control buttons that may be lit.
2. Press and release the View button.
3. Press the Video and Audio buttons as necessary to select video, audio, or both to mute or unmute.
4. One at a time, press and **hold** the buttons for the desired outputs until the selected outputs blink to indicate the mute or return to their previous state to indicate the unmute (approximately 2 seconds).

5. Press and release the View button to return the switcher to normal operation.

**NOTES:**

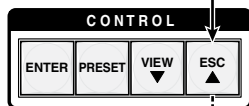
- You can mute video and audio, video-only, or audio-only outputs. Pressing and releasing the Video button and the Audio button toggles each selection on and off.
- When the DXP enters view-only mode, the output LEDs light for all outputs without ties.
- Mutes are saved to non-volatile memory. When power is removed and restored, the mute settings are retained.

### Example 8: Muting and Unmuting an Output

In the following example, several switcher outputs are muted and unmuted. The steps show the front panel indications that result from your action.

1. Press and release the Esc button.

Press the Esc button to clear all selections.

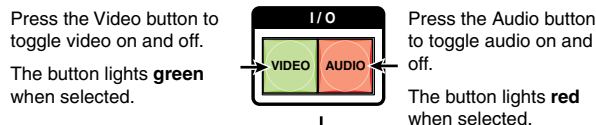


The button flashes once.

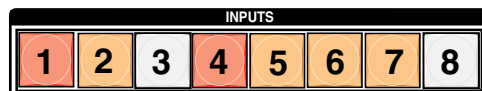
**Figure 53. Clear All Selections**

2. Press and release the View button to enter view-only mode. The View button lights red.
3. To select both video and audio for viewing and muting, if necessary, press and release the Video and Audio buttons.

**NOTE:** This example shows the front panel indications if examples 1, 2, and 3 have been completed.



Until you select an input, the buttons for all untied outputs light **amber** if **no inputs** are tied, **green** if **no video inputs** are tied (only audio is tied), or **red** if **no audio inputs** are tied (only video is tied).



**Figure 54. Select Audio Only**

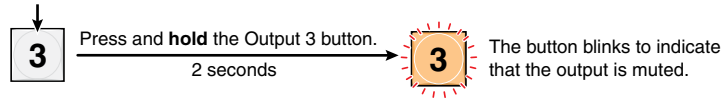
**NOTE:** Output mutes are protected when front panel lock mode 2 is selected. You can view the mutes in lock mode 2 but you cannot change them from the front panel (see “**Locking and Unlocking the Front Panel (Executive Modes)**” on page 37).

If front panel lock mode 2 is selected and you try to perform steps 4 and 5, the actions are ignored. Set the lock mode to 0 to enable changes.



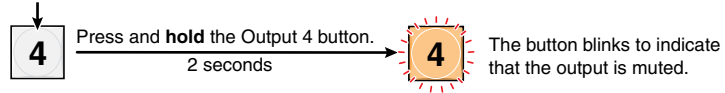
4. **One at a time**, press and **hold** the Output 3 button and then the Output 4 button until each button begins to blink (approximately 2 seconds). The output 3 and output 4 video and audio signals are muted.

Mute outputs one at a time.



**NOTE:** Video is muted in this example.

**Green** = Video is muted.  
**Red** = Audio is muted.  
**Amber** = Video and audio are muted. (*Amber is visible only after you have selected the Video and Audio buttons*).



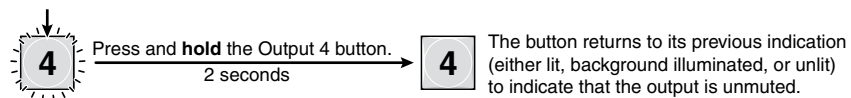
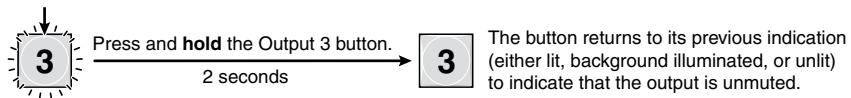
**Figure 55. Mute the Outputs**

**NOTES:**

- If both video and audio are selected, the mute action toggles both the video and audio outputs. If either the video output or the audio output is already muted, the unmuted output is muted and the muted output is unmuted.
- If both video and audio are selected and only video is muted, the output button flashes between green and amber. If only audio is selected, the output button flashes between red and amber.

5. **One at a time**, press and **hold** the Output 3 button and then the Output 4 button for approximately 2 seconds until each button returns to its previous state. The video and audio signals for outputs 3 and 4 are unmuted.

Unmute outputs one at a time.

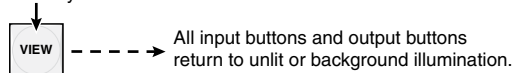


**Figure 56. Unmute the Outputs**

**NOTE:** If both video and audio are selected, the unmute action toggles both the video and audio outputs on and off. If either the video output or the audio output is already unmuted, the muted output is unmuted and the unmuted output is muted.

6. Press and release the View button to exit view-only mode.

Press the View button to exit view-only mode.



The View button returns to unlit or background illumination.

**Figure 57. Press the View Button to Exit View-only Mode**

## Locking and Unlocking the Front Panel (Executive Modes)

The matrix switchers have three levels of front panel security lock that limit the operation of the switcher from the front panel:

- **Lock mode 0** — The front panel is completely unlocked. All front panel functions are available.
- **Lock mode 1** — All changes are locked from the front panel (except for setting lock mode 2). Some functions can be viewed.
- **Lock mode 2** — Basic functions are unlocked. Advanced features are locked and can only be viewed.

Basic functions include:

- Making ties
- Saving and recalling presets
- Changing lock modes

Advanced functions include:

- Creating I/O groups
- Setting video and audio output mutes
- Setting the rear panel Remote RS232/RS422 port protocol and baud rate

**NOTE:** The switcher is shipped from the factory in lock mode 2.

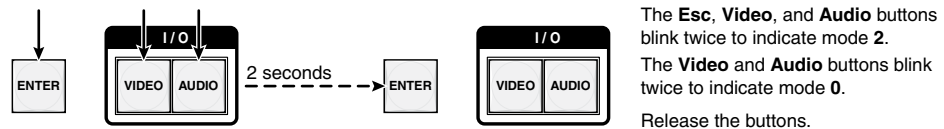
### Selecting Lock Mode 2 or Toggling Between Mode 2 and Mode 0

**NOTE:** If the switcher is in lock mode 0 or mode 1, this procedure selects mode 2. If the switcher is in lock mode 2, this procedure selects mode 0 (unlocks the switcher).

Toggle the lock on and off by pressing and holding the Enter, Video, and Audio buttons simultaneously until the following buttons blink twice (approximately 2 seconds).

- The **Esc**, **Video**, and **Audio** buttons blink if the DXP is now in lock mode **2**.
- The **Video** and **Audio** buttons blink if the DXP is now in lock mode **0**.

Press and **hold** the Enter, Video, and Audio buttons simultaneously to enable lock mode 2 or to toggle between mode 2 and mode 0.



**Figure 58.** Toggle Front Panel Lock Between Mode 2 and Mode 0

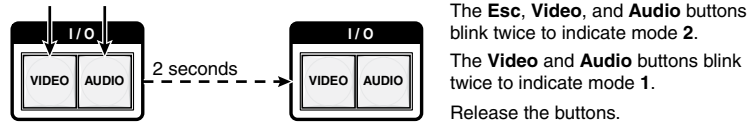
## Selecting Lock Mode 2 or Toggling Between Mode 2 and Mode 1

**NOTE:** If the switcher is in lock mode 0 or mode 1, this procedure selects mode 2.  
If the switcher is in lock mode 2, this procedure selects mode 1.

Toggle the lock on and off by pressing and holding the Video and Audio buttons until the following buttons blink twice (approximately 2 seconds).

- The **Esc**, **Video**, and **Audio** buttons blink if the DXP is now in lock mode **2**.
- The **Video** and **Audio** buttons blink if the DXP is now in lock mode **1**.

Press and **hold** the Video and Audio buttons simultaneously to enable lock mode 2 or to toggle between mode 1 and mode 2.



**Figure 59. Toggle Front Panel Lock Between Mode 2 and Mode 1**

## Switching from Lock Mode 1 to Lock Mode 0

If the switcher is in lock mode 1, you cannot change it directly to lock mode 0 (completely unlocked). You must first place the switcher in lock mode 2, then **toggle it to mode 0**.

## Resetting

There are several methods by which you can reset the DXP, and some of these methods allow for four levels of resetting. The following reset methods are available on the DXP:

- **Front panel buttons** (See "[Resetting the System from the Front Panel.](#)")
- **Rear panel Reset button** (See "[Resetting Using the Rear Panel Reset Button](#)" on the next page.)
- **SIS commands** (See the [Resets](#) commands in the Command and Response Table for SIS Commands, page 62.)
- **Matrix Switchers Control Software** (See "[Master-Reset button](#)" on page 96 in the "Matrix Software" section, starting on page 70.)

## Resetting the System from the Front Panel

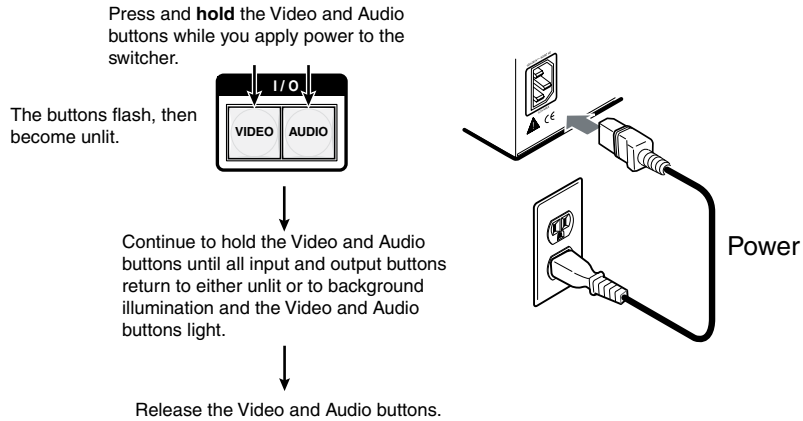
The front panel reset is identical to the **[Esc] ZXXX←** SIS command (see the [Reset whole switcher](#) command in the Command and Response table for SIS Commands, page 62). A system reset does the following:

- Clears all ties and presets
- Clears all video and audio mutes
- Resets all I/O grouping

**NOTE:** The system reset clears most image and audio adjustments. If you want to save these settings, use the Matrix Switchers Control Program and select **Save MATRIX settings as...** from the **File** menu before you perform this reset (see the "[Matrix Software](#)" section, starting on page 70).

To reset the switcher to the factory default settings, press and **hold** the Video and Audio buttons **while** you apply AC power to the switcher.

**NOTE:** System reset does not reset the Internet protocol (IP) settings or replace user-installed firmware.



**Figure 60. System Reset**

## Resetting Using the Rear Panel Reset Button

The rear panel has a recessed Reset button that initiates various levels of resets. For different reset levels, press and hold the button while the switcher is running or press and hold the button while you apply power to the switcher. Use a pointed stylus, ballpoint pen, or small Philips screwdriver to press the button.

**CAUTION:** Review the reset modes carefully. Using the wrong reset mode could result in unintended loss of flash memory programming, port reassignment, or a controller reboot.

**NOTES:**

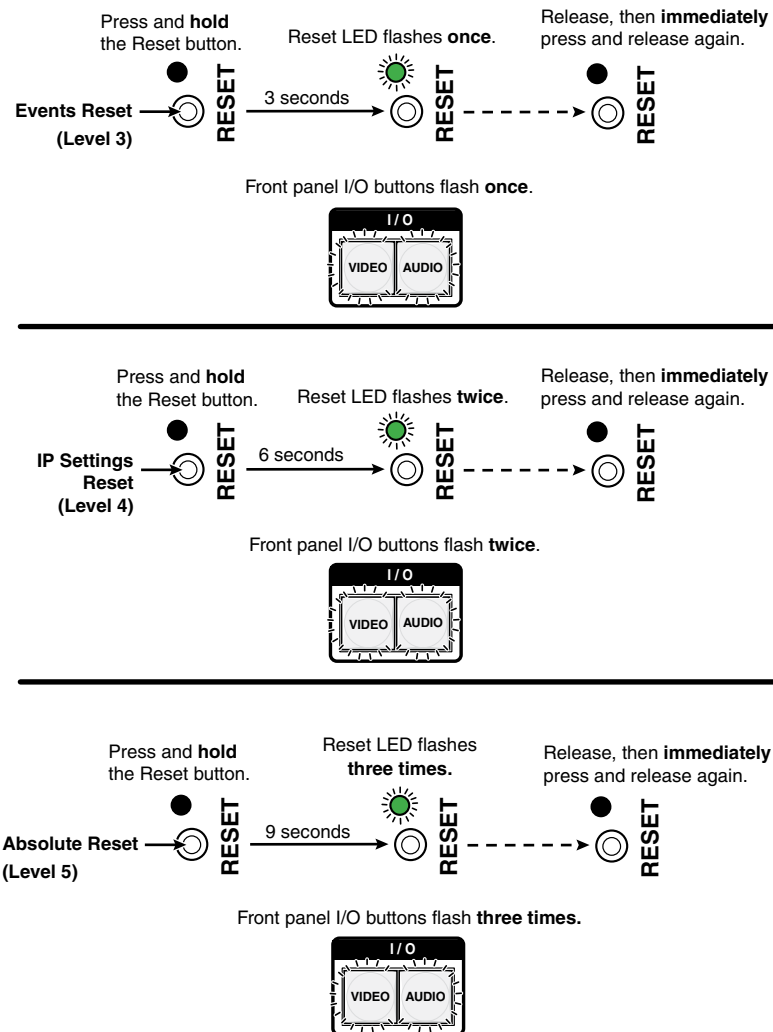
- The reset modes listed in the table close all open IP and Telnet connections and all sockets.
- The modes described in the table below are separate functions, not a continuation from mode 1 to mode 5.
- There is no reset mode 2 for DXP.

The table below provides a summary of the reset modes.

<b>Reset Modes Summary</b>			
<b>Mode</b>	<b>Activation</b>	<b>Result</b>	<b>Purpose/Notes</b>
<b>1</b>	Hold in the Reset button while applying power to the switcher.	Restores the factory-installed firmware. It does <b>not</b> clear the current configuration.	Mode 1 can be used to remove a version of firmware if incompatibility issues arise.
<b>3</b>	Hold in the Reset button until the Reset LED blinks once (after approximately 3 seconds); then within 1 second press Reset momentarily (for less than 1 second) .	Turns events on and off. During resetting, the Reset LED flashes two times if events are starting or three times if events are stopping.	Mode 3 is useful for troubleshooting.
<b>4</b>	Hold in the Reset button until the Reset LED blinks twice (once after approximately 3 seconds and again after 6 seconds); then within 1 second press Reset momentarily (for less than 1 second).	<ul style="list-style-type: none"> <li>• Enables ARP capability.</li> <li>• Sets the IP address, subnet address, and gateway address to the factory defaults.</li> <li>• Sets port mapping to the factory default.</li> <li>• Turns DHCP off.</li> <li>• Turn events off.</li> </ul> The Reset LED flashes four times in quick succession during the reset.	Mode 4 enables you to set IP address information using ARP and the MAC address. It does not replace any user-installed firmware.
<b>5</b>	Hold in the Reset button until the Reset LED blinks three times (once after approximately 3 seconds, again after 6 seconds, and then again after 9 seconds); then within 1 second press Reset momentarily (for less than 1 second).	Performs a complete reset to factory defaults (with the exception of the firmware), which includes: <ul style="list-style-type: none"> <li>• Everything mode 4 does</li> <li>• Reset of almost all real time adjustments:               <ul style="list-style-type: none"> <li>• Clears all ties, presets, audio or RS-232 mutes, and I/O grouping.</li> <li>• Resets all IP options.</li> <li>• Removes or clears all switcher files.</li> </ul> </li> </ul> The reset LED flashes four times in quick succession during the reset.	Mode 5 is useful if you want to start over with configuration and uploading and also to replace events.
<p><b>NOTE:</b> Mode 5 reset clears most adjustments. To save these settings, use the Matrix Switchers Control Program and select <b>Save MATRIX settings as...</b> from the <b>File</b> menu before you perform this reset (see the Matrix Switcher Control Program help file for more information).</p>			

To perform a soft reset of the switcher:

1. Use a small Philips screwdriver to press and **hold** the rear panel Reset button until the front panel Video and Audio buttons blink once (for an events reset), twice (for a system reset), or three times (for an absolute reset).



**Figure 61. Soft Resets**

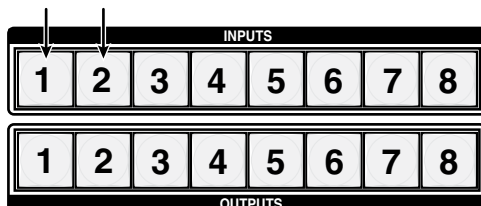
2. Release the Reset button and then immediately press and release the Reset button again. Nothing happens if the second momentary press does not occur within 1 second.

## Setting the Button Background Illumination

The buttons on the front panel can be set to have amber background illumination at all times or the background illumination can be turned off.

To toggle the background illumination on and off, press and **hold** the Input 1 and Input 2 buttons simultaneously until the button background illumination changes (approximately 2 seconds).

Press and **hold** the Input 1 and Input 2 buttons simultaneously to toggle background illumination mode on or off.



After approximately 2 seconds, release the Input 1 and Input 2 buttons.

**Figure 62.** Toggle Background Illumination On or Off

## Selecting the RS-232/RS-422 Port Protocol and Baud Rate (Rear Panel)

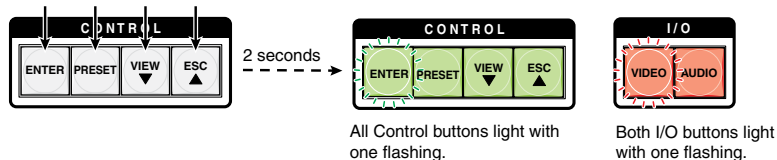
The DXP switchers can support either RS-232 or RS-422 serial communication protocol, and can operate at 9600, 19200, 38400, and 115200 baud rates. The settings of these variables can be viewed and changed from the front panel.

- NOTE:**
- The Remote RS232/RS422 port settings are protected when front panel lock mode 2 is selected. You can view the settings in lock mode 2 but you cannot adjust them from the front panel (see "[Locking and Unlocking the Front Panel \(Executive Modes\)](#)" on page 37).
  - To enable changes to the RS-232 or RS-422 settings, set the lock mode to **0**.

View and configure the switcher serial communications settings as follows:

1. To enter serial port configuration mode, simultaneously press and **hold all** four control buttons (Enter, Preset, View, and Esc) until they all light, with one flashing.

Press and **hold** the Enter, Preset, View, and Esc buttons.



The Control button that continues flashing indicates the **baud rate** as follows:

**Enter** — 9600      **Preset** — 19200  
**View** — 38400    **Esc** — 115200

The I/O button that continues flashing indicates the **protocol** as follows:

**Video** — RS-232    **Audio** — RS-422

In this example, the port is set to RS-232 at 9600 baud.

**Figure 63.** RS-232 or RS-422 Baud Rate Display

2. Release the Control buttons.

3. To change a value, press and release the button that selects the desired value (see figure 64).

Press and release the buttons to configure the RS-232/RS-422 port as follows:

**Baud rate:**

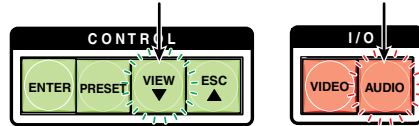
Enter — 9600      Preset — 19200  
View — 38400     Esc — 115200

**Serial protocol:**

Video — RS-232    Audio — RS-422

The selected buttons blink and the others remain lit.

In this example, the port is set to RS-422 at 38400 baud.



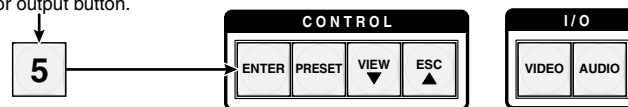
**Figure 64. RS-232/RS-422 and Baud Rate Selection**

**NOTE:** If front panel lock mode 2 is selected and you try to perform this step, the actions are ignored and the Enter, Video, and Audio buttons flash.

4. Press and release an input or output button to exit the serial port configuration mode.

Press and release an input or output button.

All Control and I/O buttons return to unlit or background illumination.



**Figure 65. Exit Serial Port Selection and Configuration mode**

## Troubleshooting

Following are recommendations for actions to take if you have problems operating the switcher:

1. Ensure that all devices are plugged in and powered on. The switcher is receiving power if the Reset/Power LED is lit.
2. Check to see if one or more outputs are muted.
3. Ensure that an active input is selected for output on the switcher.
4. Ensure that the proper signal format is supplied.
5. Check the cabling and make corrections as necessary.
6. Call the Extron S3 Sales & Technical Support Hotline if necessary.



## Configuration Worksheets

Instead of trying to remember the configuration for each preset, use worksheets to record this information. Make copies of the blank worksheet at the end of this section, and use one sheet for each preset configuration. Cross out all unused or inactive inputs and outputs. The worksheet is generic for all models of DXP. Disregard or cross out boxes for inputs and outputs that your switcher does not have.

### Worksheet Example 1: System Equipment

The following figure shows a worksheet for a DXP in a fictional organization with the system hardware annotated. Output 7 has no connection in this organization, so it has been crossed out on the worksheet.

Input Sources							
DVI PRO/ HDMI Camera #1 Main podium	DVI PRO/ HDMI Camera #2	DVI PRO/ HDMI Camera #3	VTR #1	VTR #2	VTG 400DVI	Editing Station #1	Editing Station #2
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
Main hall #1	Main hall #2	Podium monitor #1	Conf. Room	Podium monitor #2	Demo Room	<del>X</del>	Lobby monitor
Output Destinations							
Preset # <u>  3  </u> Title: <u>Weekly status mtg</u> Video ties: <u>          </u>							
Fill in the preset number and use colors, dashes, and so forth to make connecting lines.							

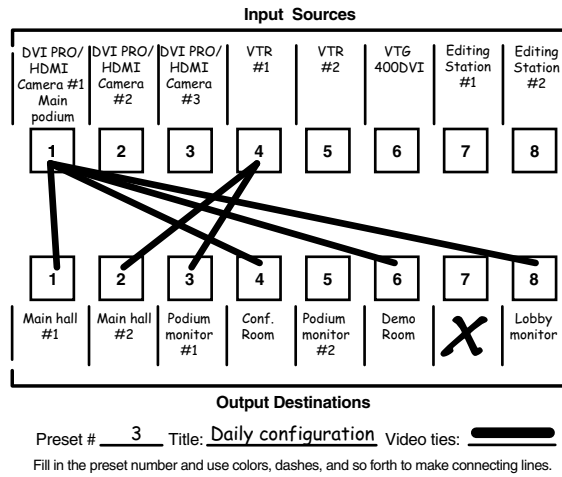
**Figure 66. Worksheet Example 1: System Equipment**

Inputs include VTRs, editing stations, DVI Pro/HDMI cameras, and an Extron VTG 400DVI. Output devices include various DVI Pro/HDMI monitors.

The VTG 400DVI video test generator connected to input 6 enables a video test pattern to be sent to one, several, or all output devices for problem isolation or adjustment purposes.

## Worksheet Example 2: Daily Configuration

The following figure continues from worksheet example 1 by showing the video ties that make up the configuration of preset 1. A solid ink line shows video ties.



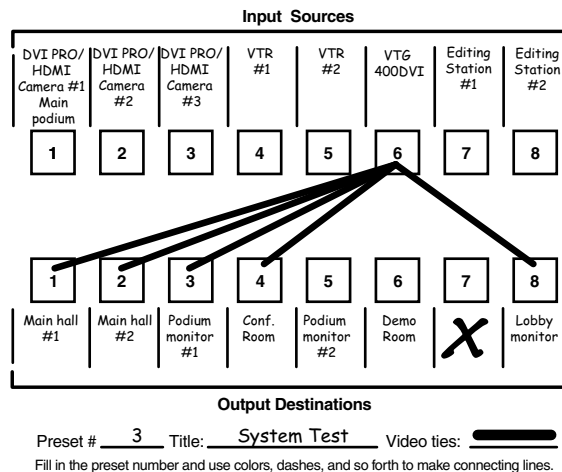
**Figure 67. Worksheet Example 2: Daily Configuration**

In this example:

- The image of the presenter, from the main podium camera (input 1), is:
  - Displayed in the main hall (output 1)
  - Displayed in the conference room (output 4) to the overflow crowd
  - Displayed in the lobby (output 8)
  - Displayed in the Demo Room (output 6)
- The presenter has a presentation stored in the VTR (input 4) that is:
  - Displayed in the main hall (output 2)
  - Displayed locally on the #1 podium (output 3).

## Worksheet Example 3: Test Configuration

The AV system in our fictional organization needs to be fine tuned on a regular basis. The following figure shows a typical test configuration, with an Extron video test generator (input 6) generating a test pattern to all monitors (outputs 1, 2, 3, 4, and 8).



**Figure 68. Worksheet Example 3: Test Configuration**

## Worksheet Form

### Input Sources

1	2	3	4	5	6	7	8

1	2	3	4	5	6	7	8

### Output Destinations

Preset # \_\_\_\_\_ Title: \_\_\_\_\_

Fill in the preset number and use colors, dashes, and so forth to make connecting lines.  
Disregard or cross out the input and output boxes that do not apply to your switcher.

# SIS Configuration and Control

This section describes the serial and Ethernet connections through which the Extron Simple Instruction Set (SIS) commands can be issued, and lists the commands that are available for controlling and configuring the DXP switchers. Topics include:

- [Serial Ports](#)
- [Ethernet Port](#)
- [Host to Switcher Instructions](#)
- [Switcher-initiated Messages](#)
- [Switcher Error Responses](#)
- [Using the Command and Response Tables for SIS Commands](#)
- [SIS Commands for DXP](#)
- [IP-specific SIS Commands](#)

## Serial Ports

The DXP switcher can support either RS-232 or RS-422 serial communication protocol, and can operate at 9600, 19200, 38400, or 115200 baud rates (see [“Selecting the RS-232/RS-422 Protocol and Baud Rate \(Rear Panel\)”](#) on page 42 to configure this port from the front panel).

The DXP has two connectors that can be used for serial control. Both ports enable use of SIS commands and the control software. The default protocol for these ports is:

9600 baud, 8 data bits, 1 stop bit, no parity, and no flow control.

- **Rear Panel RS-232/RS-422 Port:** The rear panel 9-pin D female connector labeled Remote RS232/RS422 can be connected to the RS-232 or RS-422 serial port of a host device such as a computer running the Extron DataViewer or the HyperTerminal utility, an RS-232 capable PDA, or a control system.

For the pin assignments for this port, see [“Remote RS232/RS422 port \(rear panel\)”](#) on page 10.

- **Front Panel RS-232 Port:** The front panel TRS connector labeled Config can be connected to a host device for RS-232 control only.

The optional 2.5 mm cable (Extron part number 70-335-01) can be used to connect the DXP to the host. For connection information for this cable, see [“RS-232 Config port \(front panel\)”](#) on page 10.

## Ethernet Port

The rear panel Ethernet connector on the switcher can be connected to an Ethernet LAN or WAN. Communication between the switcher and the controlling device can be via Extron DataViewer or Telnet (a TCP socket using port 23). The Telnet port can be changed, if necessary, via SIS. For information on connecting via Telnet, see “[Connecting as a Telnet Client](#)” on page 129.

The Ethernet connection makes SIS control of the switcher possible using a computer connected to the same LAN or WAN. The SIS commands and behavior of the product are identical to the commands and behavior the product exhibits when you are communicating with it via a serial port.

## Ethernet Cable

The Ethernet cable must be properly terminated for your application as either a straight-through cable or a crossover cable. For pin assignments for these cables, see “[Ethernet Connection](#)” on page 9.

## Default IP Addresses

To access the DXP switcher via the Ethernet port, obtain the IP address of the switcher (and the subnet mask and gateway address if needed) from your network administrator. If the IP address has been changed to an address comprised of words and characters, you can determine the actual numeric IP address using the ping (ICMP) utility (see “[IP Addressing](#)” on page 127 for more details). If the addresses have not been changed, the factory-specified defaults are:

- IP address: 192.168.254.254
- Subnet mask: 255.255.0.0
- Gateway address: 0.0.0.0

## Establishing an Ethernet Connection

Establish a network connection to a DXP switcher as follows:

1. Open a TCP connection to port 23, using the IP address of the switcher. A variety of methods are available for making this connection, including Telnet or utilities such as Extron DataViewer and HyperTerminal.

The switcher responds with a copyright message that includes the date, the name of the product, firmware version, part number, and the current date and time.

**NOTES:**

- If the switcher is not password-protected, the device is ready to accept SIS commands immediately after it sends the copyright message.
- If the switcher is password-protected, a Password prompt appears below the copyright message.

2. If the switcher is password-protected, enter the appropriate administrator or user password.
3. If the password is accepted, the switcher responds with Login User or Login Administrator.
4. If the password is not accepted, the Password prompt reappears.

## Connection Timeouts

The Ethernet link times out after a designated period of no communications. By default, this timeout value is set to 5 minutes, but the value can be changed (see the **Configure current port timeout** command in the Command and Response Table for IP-specific SIS Commands, page 69).

**NOTE:** Extron recommends leaving the default timeout at 5 minutes and periodically issuing the Query (Q) command to keep the connection active. If there are long idle periods, Extron recommends disconnecting and reopening the connection when another command must be sent.

## Number of Connections

A DXP switcher can have up to 200 simultaneous TCP connections, including all http and Telnet connections. When the connection limit is reached, the switcher accepts no new connections until some have been closed. No error message or indication is given that the connection limit has been reached. To maximize performance, keep the number of connections low and close unnecessary sockets.

## Verbose Mode

The connection to a DXP switcher can be used to monitor for changes that occur on the switcher, such as front panel operations and SIS commands from other connections or a serial port. To receive change notices from the switcher, you must enable verbose mode 1 or 3 (see the **Set verbose mode** command in the Command and Response Table for IP-specific SIS Commands, page 69). In verbose mode 1 or 3, changes are reported in messages that resemble SIS command responses.

## Host-to-Switcher Instructions

SIS commands consist of one or more characters per command field. They do not require any special characters to begin or end the command character sequence. Each switcher response to an SIS command ends with a carriage return and a line feed (CR/LF = **↵**), which signals the end of the response character string. A string is one or more characters.

## Switcher-initiated Messages

When a local event such as a front panel operation occurs, the switcher responds by sending a message to the host. The switcher-initiated messages are listed below (underlined). In these messages, *Vn.nn* is the firmware version number and *60-nnnn-01* is the DXP part number.

### With an RS-232 or RS-422 connection:

(c) Copyright 2011, Extron Electronics DXP DVI-HDMI, Vn.nn, 60-nnnn-01↵

The switcher initiates the copyright message if it is powered on while connected to the computer.

### With an Ethernet connection:

(c) Copyright 2011, Extron Electronics DXP DVI-HDMI, Vn.nn, 60-nnnn-01↵

Ddd, DD Mmm YYYY HH:MM:SS

The switcher initiates the copyright message when a connection is established via Internet protocol (IP).

#### ←Password:

The switcher initiates the password message immediately after the copyright message when the controlling system is connected using TCP/IP or Telnet and the switcher is password protected. This message means that the switcher requires an administrator or user level password before it will respond to the commands entered via this link.

**NOTE:** The Password prompt is redisplayed if an incorrect password is entered.

#### ←Login Administrator←

#### ←Login User←

The switcher initiates the login message when a correct administrator or user password has been entered. If the user and administrator passwords are the same, the switcher defaults to administrator privileges.

#### Qik←

The switcher initiates the Qik message when a front panel switching operation has occurred.

#### Rprnn←

The switcher initiates the Rpr message when a memory preset has been recalled from the front panel. "nn" is the preset number.

#### Sprnn←

The switcher initiates the Spr message when a memory preset has been saved from the front panel. "nn" is the preset number.

#### Vmtn←

The switcher initiates the Vmt message when a video output mute is toggled on or off from the front panel. "n" is the mute status: 1 = on, 0 = off.

#### Amtn←

The switcher initiates the Vmt message when a video output mute is toggled on or off from the front panel. "n" is the mute status: 1 = on, 0 = off.

#### Exen←

The switcher initiates the Exe message when executive mode is toggled on or off from the front panel. "n" is the executive mode status: 0 = front panel unlocked, 1 = all front panel functions locked, 2 = only advanced functions locked.

## Switcher Error Responses

When the DXP receives an SIS command and determines that it is valid, it performs the command and sends a response to the host device. If the switcher is unable to perform the command because the command is invalid or contains invalid parameters, the switcher returns an error response to the host. The error response codes are:

- E01 — Invalid input channel number (out of range)
- E10 — Invalid command
- E11 — Invalid preset number
- E12 — Invalid output number or port number
- E13 — Invalid parameter (out of range)
- E14 — Command not available for matrix configuration
- E17 — System timed out (caused by direct write of global presets)
- E21 — Invalid room number
- E22 — Busy
- E24 — Privilege violation (Ethernet and Extron software only)
- E25 — Device not present
- E26 — Maximum number of connections exceeded
- E27 — Invalid event number
- E28 — Bad filename or file not found
- E30 — Hardware failure (followed by a colon [:] and a descriptor number)
- E31 — Attempt to break port pass-through when it has not been set

**NOTE:** User privileges extend to all view and read commands except reading the administrator password. Users can also perform the following functions:

- Creating ties
- Recalling presets
- Muting outputs

## Using the Command and Response Tables for SIS Commands

The **Command and Response Tables** begin on page 55. Upper- and lowercase letters are acceptable in the command field except where indicated. The table below shows the hexadecimal equivalent of each ASCII character used in the command/response table.

		ASCII to Hex Conversion Table															
Space →	20	!	21	"	22	#	23	\$	24	%	25	&	26	'	27		
	(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/		
	0	30	1	31	2	32	3	33	4	34	5	35	6	36	7		
	8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?		
	@	40	A	41	B	42	C	43	D	44	E	45	F	46	G		
	H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O		
	P	50	Q	51	R	52	S	53	T	54	U	55	V	56	W		
	X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_		
	`	60	a	61	b	62	c	63	d	64	e	65	f	66	g		
	h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o		
	p	70	q	71	r	72	s	73	t	74	u	75	v	76	w		
	x	78	y	79	z	7A	{	7B		7C	}	7D	~	7E	DEL		
															7F		

**Figure 69.** ASCII to Hexadecimal Conversion

## Special Characters

Use of the following characters is not recommended as part of preset names, the switcher name, passwords, or locally created file names:

+ ~ , @ = ` [ ] { } < > ' " ; (semicolon) : (colon) | \ ? and {space}.



# SIS Commands for DXP

## Symbol Definitions for DXP

- ↵ = Carriage return and line feed
- ← = Carriage return (no line feed)
- = Space
- Esc = Escape key

**NOTE:** Input and output numbers in commands may be entered as either one-digit, two-digit, or three-digit numbers. All input and output numbers are reported as two-digit numbers in the response.

- |    |  |   |
|----|--|---|
| X1 | = Input number                                       | 1 – maximum number of inputs for your model   |
| X2 | = Input number (for ties)                            | ∅ – maximum number of inputs for your model (∅ = untied)                                |
| X3 | = Output number                                      | 1 – maximum number of outputs for your model  |
| X4 | = Lock mode, power, supply or individual mute status | ∅ = lock mode 0, not OK, or unmuted<br>1 = lock mode 1, OK, or muted<br>2 = lock mode 2 |
| X5 | = Group number (for I/O grouping)                    | 1 through 4 groups<br>∅ = no group  |
| X6 | = Room number (for room presets)                     | 1∅ maximum. Each room can have up to 10 room presets (X8) assigned.                     |

**NOTE:** A room is a subset of operator-selected outputs that relate to each other. The DXP switchers support up to 10 rooms, each of which can consist of from 1 to 16 outputs.

- |    |                        |   |
|----|------------------------|---|
| X7 | = Global preset number | ∅∅ – 32 (∅∅ = current configuration)                    |
| X8 | = Room preset number   | ∅∅ – current ties for the room in view mode, 10 maximum |

**NOTE:** A room preset is a stored configuration with all of the outputs assigned to a single room. When a room preset is retrieved from memory, it becomes the current configuration.

- |     |                                   |   |
|-----|-----------------------------------|---|
| X9  | = All video and audio mute status | ∅ = no mutes<br>1 = video mute<br>2 = audio mute<br>3 = video and audio mute  |
| X10 | = HDCP status                     | ∅ = no input or output connected<br>1 = input or output connected and <b>not</b> HDCP compliant<br>2 = input or output connected and HDCP compliant                 |
| X11 | = Connection status               | ∅ = no input connected<br>1 = input connected   |
| X13 | = Name                            | 12 characters maximum for input, output, and global preset names<br>11 characters maximum for room names<br>Upper- and lowercase alphanumeric characters are valid. |

**NOTE:** The following characters are invalid or not recommended in the name: {space} ~ , @ = ' [ ] { } < > ' ' " " ; : | \ and ?.

- |     |                 |  |
|-----|-----------------|--|
| X14 | = Total inputs  | Total number of inputs for this switcher   |
| X15 | = Total outputs | Total number of outputs for this switcher  |
| X16 | = Voltage       | Positive or negative voltage and magnitude |
| X17 | = Temperature   | Degrees Fahrenheit                         |
| X18 | = Fan speed     | In RPM                                     |

**X19** = EDID reference file for DDC      01 – 40      32 = 720p (default) data

EDID is a communications protocol or instruction set for the identification of display devices to computers using the DDC (Display Data Channel) transmission standard. EDID information consists of the resolution, refresh rate, and pixel clock information of a display device. You can apply an EDID to a selected input by selecting one of the categories of EDID files shown in the table below.

- The EDID of the display connected to an output (numbers 1 through the number of outputs on your DXP)
- One of 28 factory-loaded EDID files (numbers 9 through 36)
- One of the four user-defined files, to which you have saved the EDID for the device connected to output 1 (numbers 37 through 40)

EDID Table — DDC Source Selection					
SIS Value <b>X19</b>	Resolution	Refresh (Hz)	SIS Value <b>X19</b>	Resolution	Refresh (Hz)
1	Output 1		21	1280x1024	60
2	Output 2		22	1280x1024	75
3	Output 3		23	1365x768	60
4	Output 4		24	1365x768	75
5	Output 5		25	1366x768	60
6	Output 6		26	1366x768	75
7	Output 7		27	1400x1050	60
8	Output 8		28	1600x1200	60
9	640x480	60	29	480p 2-channel audio	60
10	640x480	75	30	576p 2-channel audio	60
11	800x600	60	31	720p 2-channel audio	50
12	800x600	75	<b>32</b>	<b>720p 2-channel audio (Default)</b>	<b>60</b>
13	852x480	60	33	1080p multi-channel audio	60
14	852x480	75	34	1080i 2-channel audio	60
15	1024x768	60	35	1080p 2-channel audio	50
16	1024x768	75	36	1080p 2-channel audio	60
17	1024x852	60	37	User assigned #1	
18	1024x852	75	38	User assigned #2	
19	1280x768	60	39	User assigned #3	
20	1280x768	75	40	User assigned #4	

**NOTES:** • Multi-channel audio consists of:

PCM	2-channel audio (stereo)	DTS	8-channel audio
AC-3	6-channel audio	E-AC-3	8-channel audio
PCM	8-channel audio	DTS-HD	8-channel audio
AC-3	8-channel audio	MLP	8-channel audio

- 2-channel audio consists of PCM, 2-channel audio (stereo).

<b>X20</b>	= EDID file data block	256 bytes of binary data
<b>X21</b>	= Firmware version number	Shown to second decimal place ( <i>n.nn</i> )
<b>X22</b>	= Verbose firmware version, description, and upload date and time	
<b>X23</b>	= Sync present	Ø = no sync 3 = signal present
<b>X24</b>	= HDCP authorization status	Ø = HDCP authorization off 1 = HDCP authorization on (default)

**NOTE:** If the source requires HDCP authentication, ensure that HDCP authorization is set to On (the default).

## Command and Response Table for DXP SIS Commands

Command	ASCII Command (Host to Switcher)	Response (Switcher to Host)	Additional Description
<b>Create Ties</b>			
<b>NOTES:</b> <ul style="list-style-type: none"> <li>Commands can be entered back-to-back in a string, with no spaces. <i>Example:</i> 1*1!02*02&amp;003*003%4*8\$</li> <li>The quick multiple tie and tie input to all output commands activate all I/O switches simultaneously.</li> <li>The DXP switchers support 1-, 2-, and 3-digit numeric entries (1*1!, 02*02&amp;, or 003*003%).</li> <li>The &amp; tie command for RGB and the % tie command for video can be used interchangeably on the DXP.</li> </ul>			
Tie input $\boxed{x2}$ to output $\boxed{x3}$ , video and audio <i>Example:</i>	$\boxed{x2}*\boxed{x3}!$ 1*3!	Out $\boxed{x3}$ •In $\boxed{x2}$ •A11← Out3•In1•A11←	Tie Input $\boxed{x2}$ video and audio to Output $\boxed{x3}$ . Tie Input 1 video and audio to Output 3.
Tie input $\boxed{x2}$ to output $\boxed{x3}$ , RGB only <i>Example:</i> (See second note, above.)	$\boxed{x2}*\boxed{x3}\&$ 8*4&	Out $\boxed{x3}$ •In $\boxed{x2}$ •RGB← Out4•In8•RGB←	Video breakaway Tie Input 8 RGB to Output 4.
Tie input $\boxed{x2}$ to output $\boxed{x3}$ , video only <i>Example:</i> (See second note, above.)	$\boxed{x2}*\boxed{x3}\%$ 7*5%	Out $\boxed{x3}$ •In $\boxed{x2}$ •Vid← Out5•In7•Vid←	Video breakaway Tie Input 7 video to Output 5.
Tie input $\boxed{x2}$ to output $\boxed{x3}$ , audio only <i>Example:</i>	$\boxed{x2}*\boxed{x3}\$$ 6*4\$	Out $\boxed{x3}$ •In $\boxed{x2}$ •Aud← Out4•In6•Aud←	Audio breakaway Tie Input 6 audio to Output 4.
Quick multiple tie <i>Example:</i>	$\boxed{Esc}+Q\boxed{x2}*\boxed{x3}\% \dots \boxed{x2}*\boxed{x3}! \leftarrow$ $\boxed{Esc}+Q3*4\%3*5\%3*6! \leftarrow$	Qik← Qik←	Tie Input 3 video to Output 4, tie Input 3 video to Output 5, and tie Input 3 audio and video to Output 6.
Tie input to all outputs, video and audio <i>Example:</i>	$\boxed{x2}*!$ 5*!	In $\boxed{x2}$ •A11← In5•A11←	Tie Input 5 video to all outputs.
Tie input to all outputs, RGB only <i>Example:</i> (See second note, above.)	$\boxed{x2}* \&$ 5*&	In $\boxed{x2}$ •RGB← In5•RGB←	Video breakaway Tie Input 5 RGB to all outputs.
Tie input to all outputs, video only <i>Example:</i> (See second note, above.)	$\boxed{x2}*\%$ 2*%	In $\boxed{x2}$ •Vid← In2•Vid←	Video breakaway Tie Input 2 video to all outputs.
Tie input to all outputs, audio only	$\boxed{x2}*\$$	In $\boxed{x2}$ •Aud←	Audio breakaway
<b>Mute Commands</b>			
Video mute	$\boxed{x3}*1B$	Vmt $\boxed{x3}$ *1←	Mute Output $\boxed{x3}$ video (video off).
Video unmute	$\boxed{x3}*\emptyset B$	Vmt $\boxed{x3}$ * $\emptyset$ ←	Unmute Output $\boxed{x3}$ video (video on).
View individual video mute	$\boxed{x3}B$	$\boxed{x4}$ ←	View mute status $\boxed{x4}$ for video Output $\boxed{x3}$ .
Global video mute	1*B	Vmt1←	Mute all video outputs.
Global video unmute	$\emptyset*B$	Vmt $\emptyset$ ←	Unmute video for all outputs.

**NOTE:**  $\boxed{x2}$  = Input number  $\emptyset$  – maximum number of inputs for your model ( $\emptyset$  = untied)  
 $\boxed{x3}$  = Output number 1 – maximum number of outputs for your model  
 $\boxed{x4}$  = Mute status of individual output  $\emptyset$  = unmuted, 1 = muted

Command	ASCII Command (Host to Switcher)	Response (Switcher to Host)	Additional Description
<b>Mute Commands (continued)</b>			
Audio mute	<code>[X3]*1Z</code>	<code>Amt[X3]*1↵</code>	Mute audio for Output <code>[X3]</code> (audio off).
Audio unmute	<code>[X3]*ØZ</code>	<code>Amt[X3]*Ø↵</code>	Unmute audio for Output <code>[X3]</code> (audio on).
View individual audio mute	<code>[X3]Z</code>	<code>[X4]↵</code>	View audio mute status <code>[X4]</code> for Output <code>[X3]</code> .
Global audio mute	<code>1*Z</code>	<code>Amt1↵</code>	Mute audio for all outputs.
Global audio unmute	<code>Ø*Z</code>	<code>AmtØ↵</code>	Unmute all audio outputs.
View all audio and video mutes	<code>[Esc]VM</code>	<code>[X9]↵</code>	View audio and video mute status <code>[X9]</code> for all outputs. Each <code>[X9]</code> response is the mute status of an output, starting from Output 1.
<i>Example:</i> <b>DXP DVI Pro 88</b>	<code>[Esc]VM↵</code>	<code>MutØ1ØØ23ØØ↵</code>	Output 2 video, Output 5 audio, and Output 6 video and audio are muted. All other outputs are unmuted.
<b>NOTE:</b> The “Mut” portion of the response appears only when the switcher is in verbose mode 2 or 3 (see the <a href="#">Set verbose mode command</a> on page 69).			

<b>Save, Recall, and Directly Write Global and Room Presets</b>			
<b>NOTES:</b> <ul style="list-style-type: none"> <li>• If you try to recall a preset that is not saved, the matrix switcher responds with the error code E11.</li> <li>• If the room is nonexistent, the matrix switcher responds with the error code E21.</li> <li>• The following characters are invalid or not recommended in preset names: + - , ` @ = [ ] { } ‘ ’ “ ” ; :   \ and ?</li> </ul>			
Save current configuration as a global preset	<code>[X7],</code>	<code>Spr[X7]↵</code>	Save the current configuration as preset <code>[X7]</code> . The command character is a comma.
<i>Example:</i>	<code>9,</code>	<code>SprØ9↵</code>	Save current ties as preset 9.
Recall a global preset	<code>[X7].</code>	<code>Rpr[X7]↵</code>	Recall global preset <code>[X7]</code> . The command character is a period.
<i>Example:</i>	<code>5.</code>	<code>RprØ5↵</code>	Recall preset 5, which becomes the current configuration.
Save current configuration as a room preset	<code>[X6]*[X8],</code>	<code>Rmm[X6]·Spr[X8]↵</code>	Save the current configuration as preset <code>[X8]</code> for room <code>[X6]</code> . The command character is a comma.
<i>Example:</i>	<code>3*9,</code>	<code>RmmØ3·SprØ9↵</code>	Save current ties as preset 9 for room 3.

<b>NOTE:</b>	<code>[X3]</code> = Output number <code>[X4]</code> = Mute status for individual output <code>[X6]</code> = Room number (for room presets) <code>[X7]</code> = Global preset number <code>[X8]</code> = Room preset number <code>[X9]</code> = Audio and video mute status for all outputs (VM command)	1 – maximum number of outputs for your model Ø = unmuted, 1 = muted Each room can have up to 10 presets ( <code>[X8]</code> ) assigned. ØØ – 32. ØØ = current configuration ØØ – current ties for the room in view mode, 10 maximum For each output: Ø = no mutes, 1 = video mute, 2 = audio mute, 3 = video and audio mute
--------------	--	---

Command	ASCII Command (Host to Switcher)	Response (Switcher to Host)	Additional Description
<b>Save, Recall, and Directly Write Global and Room Presets (continued)</b>			
Directly write a global preset	<code>[Esc]+[X7]P[X2]*[X3]![X2]*[X3%][X2]*[X3]\$...[X2]*[X3]&amp;←</code>	<code>Spr[X7]←</code>	The tie all (!), tie RGB (&), tie video (%), and tie audio (\$) commands are all valid.
<i>Example:</i>	<code>[Esc]+27P1*5!5*2\$3*6%3*8&amp;←</code>	<code>Spr27←</code>	<u>Brackets are shown to separate ties for clarity only.</u> Create global preset 27, which ties video and audio Input 1 to Output 5, audio Input 5 to Output 2, video Input 3 to Output 6, and video Input 3 to Output 8.
<b>NOTE:</b> The direct write of a global preset should always be preceded by a <b>clear global preset ties</b> command of that same preset number, as shown below. In a directly-written preset, the tied input for each output position (or no tied input) remains unchanged unless overwritten or cleared.			
If you do not clear the ties in a global preset number before you directly write a global preset to that number, ties that are part of the previous version of the specified preset with the same number can become part of the newly-created preset.			
Clear a global preset	<code>[Esc] + [X7]P0*!←</code>	<code>Spr[X7]←</code>	Clear all ties in preset [X7].
<i>Example:</i>	<code>[Esc] + 27P0*!←</code>	<code>Spr27←</code>	Clear all ties in preset 27.
Write room outputs	<code>[Esc][X6],[X3]<sup>1</sup>, [X3]<sup>2</sup>, ... [X3]<sup>n</sup>MR←</code>	<code>Mpr[X6],[X3]<sup>1</sup>, [X3]<sup>2</sup>, ... [X3]<sup>n</sup>←</code>	Assign outputs to room [X6]. See the notes below.
<b>NOTES:</b>			
<ul style="list-style-type: none"> <li>• A room can contain a maximum of 16 outputs.</li> <li>• An output can belong to only one room.</li> <li>• The maximum number of rooms ([X6]) is 10.</li> <li>• If no room name is assigned (see the <b>Names</b> commands on page 61), the default name is "Room #[X6] • [X3]<sup>1</sup>, • [X3]<sup>2</sup>, • [X3]<sup>3</sup>."</li> </ul>			
<i>Example:</i>	<code>[Esc]8, 3, 4, 5, 6MR←</code>	<code>Mpr8, 3, 4, 5, 6←</code>	Outputs 3, 4, 5, and 6 are assigned to room 8.
Read room outputs	<code>[Esc][X6]MR←</code>	<code>[X13][X6],[X3]<sup>1</sup>, [X3]<sup>2</sup>, ... [X3]<sup>n</sup>←</code>	Display the outputs assigned to room [X6].
<i>Example:</i>	<code>[Esc]3MR←</code>	<code>Class1, 1, 2, 6, 8←</code>	Outputs 1, 2, 6, and 8 are assigned to room 3, which is named "Class 1."
Recall room preset	<code>[X6]*[X8].</code>	<code>Rmm[X6] • Rpr[X8]←</code>	Command character is a period.

<b>NOTE:</b>	[X2] = Input number (for ties)	Ø – maximum number of inputs for your model
	[X3] = Output number	1 – maximum number of outputs for your model
	[X6] = Room number (for room presets)	Each room can have up to 10 presets ([X8]) assigned.
	[X7] = Global preset number	ØØ – 32. ØØ = current preset
	[X8] = Room preset number	ØØ – current ties for the room in view mode, 10 maximum
	[X13] = Room name	11 characters maximum for room names. Upper- and lowercase letters are valid.
<b>NOTE:</b> The following characters are invalid or not recommended in the name: {space} ~ , @ = ` [ ] { } < > ' ' " " ; :   \ and ?		

Command	ASCII Command (Host to Switcher)	Response (Switcher to Host)	Additional Description
<b>Save, Recall, and Directly Write Global and Room Presets (continued)</b>			
Directly write a room preset	<code>[Esc]+[X6]*[X8]P[X2]*[X3]! [X2]*[X3]%[X2]*[X3]\$ . . . [X2]*[X3]&amp; ←</code>	<code>Rmm[X6] • Spr[X8] ←</code>	Enter as many ties as are valid for this model. Tie all (!), tie RGB (&), tie video (%), and tie audio (\$) commands are all valid.
<i>Example:</i>	<code>[Esc]+7*3P1*7&amp;3*5\$4*5%6*6! ←</code>	<code>Rmm07 • Spr03 ←</code>	Brackets are shown to separate ties for clarity only. Create preset 3 for room 7, which ties video Input 1 to Output 7, audio Input 3 to Output 5, RGB Input 4 to Output 5, and video and audio Input 6 to Output 6.
<b>View Ties and Presets</b>			
<b>NOTE:</b> The & view tie command for RGB and the % view tie command for video can be used interchangeably on the matrix switchers.			
View video and audio output tie	<code>[X3]!</code>	<code>[X2] ←</code>	View Output <code>[X3]</code> tied to Input <code>[X2]</code> .
<i>Example:</i>	<code>4!</code>	<code>7 ←</code>	Input 7 video and audio are tied to Output 4.
View RGB output tie	<code>[X3]&amp;</code>	<code>[X2] ←</code>	Input 2 RGB is tied to Output 7.
<i>Example:</i>	<code>7&amp;</code>	<code>2 ←</code>	
View video output tie	<code>[X3]%</code>	<code>[X2] ←</code>	Input 6 video is tied to output 3.
<i>Example:</i>	<code>3%</code>	<code>6 ←</code>	
View audio output tie	<code>[X3]\$</code>	<code>[X2] ←</code>	Audio Input <code>[X2]</code> is tied to Output <code>[X3]</code> .
View output mutes	<code>[Esc]VM ←</code>	<code>[X9]'[X9]² . . . [X9]ⁿ ←</code>	Each <code>[X9]</code> response is the mute status of an output, starting from Output 1. <i>n</i> = the maximum number of outputs for this model.
<i>Example:</i> <b>DXP DVI Pro 88</b>	<code>[Esc]VM ←</code>	<code>Mut01002300 ←</code>	Output 2 video, Output 5 audio, and Output 6 video and audio are muted. All other outputs are unmuted.
<b>NOTE:</b> The Mut portion of the response appears only when the switcher is in verbose mode 2 or 3 (see the <a href="#">Set verbose mode command</a> on page 69).			

<b>NOTE:</b>	<code>[X2]</code> = Input number (for ties) <code>[X3]</code> = Output number <code>[X6]</code> = Room number (for room presets) <code>[X8]</code> = Room preset number <code>[X9]</code> = Audio and video mute status for all outputs (VM command)	<code>Ø</code> – maximum number of inputs for your model <code>1</code> – maximum number of outputs for your model Each room can have up to 10 room presets ( <code>[X8]</code> ) assigned. <code>00</code> – current ties for the room in view mode, 10 maximum <b>For each output:</b> <code>Ø</code> = no mutes, <code>1</code> = video mute, <code>2</code> = audio mute, <code>3</code> = video and audio mute
--------------	--	---

Command	ASCII Command (Host to Switcher)	Response (Switcher to Host)	Additional Description
<b>View Ties and Presets (continued)</b>			
View video global preset configuration	<code>[Esc][X7]*1*1VC←</code>	<code>[X2]•[X2]•...•[X2]•Vid←</code>	Show preset <code>[X7]</code> video configuration. Show the input <code>([X2])</code> tied to 16 sequential outputs, starting from output 1.
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>For all DXP models, the starting output number is 1.</li> <li>The response shows 16 outputs regardless of the number of outputs your DXP actually has. All outputs in excess of the number of outputs on your switcher are shown as dashes (–).</li> <li>To view the current video configuration, enter <code>[Esc][X7]*1*1VC←</code> where <code>[X7] = 0</code>.</li> </ul>			
<p><i>Example:</i> <b>DXP 88 DVI Pro</b> <b>DXP 88 HDMI</b></p>	<code>[Esc]4*17*1VC←</code>	<p>Response = tied input: 8 • 8 • 2 • 8 • 8 • 7 • 7 • 0 • – • – • – • – • – • – • – • – • Vid ←</p> <p>Output: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16</p> <p>Input 2 tied to output 3</p> <p>No tied input</p> <p>No outputs</p>	<p>Each position shown in the response is an output: left = starting output (1), right = starting output +15 (16). The number in each position is the input tied to that output.</p> <p>In this example, preset 4, video Input 8 is tied to Outputs 1, 2, 4, and 5; Input 2 is tied to Output 3; and Input 7 is tied to Outputs 6 and 7. No input is tied to Output 8. Outputs 9 through 16 do not exist on the DXP, so they are shown as having no tied inputs.</p>
View audio global preset configuration	<code>[Esc][X7]*01*2VC←</code>	<code>[X2]•[X2]•...•[X2]•Aud←</code>	Show preset <code>[X7]</code> audio configuration. Show the input <code>([X2])</code> tied to 16 sequential outputs, starting from Output 1.
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>For all DXP models, the starting output number is 1.</li> <li>The response shows 16 outputs regardless of the number of outputs your DXP actually has. All outputs in excess of the number of outputs on your switcher are shown as dashes (–).</li> <li>To view the current audio configuration, enter <code>[Esc][X7]*1*2VC←</code> where <code>[X7] = 0</code>.</li> </ul>			
<p><i>Example:</i> <b>DXP 84 DVI Pro</b> <b>DXP 84 HDMI</b></p>	<code>[Esc]15*1*2VC←</code>	<p>Response = tied input: 2 • 6 • 1 • 0 • – • – • – • – • – • – • – • – • – • – • Aud ←</p> <p>Output: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16</p> <p>Input 6 tied to output 2</p> <p>No tied input</p> <p>No outputs</p>	<p>See below.</p> <p>Each position shown in the response is an output: left = starting output (1), right = starting output +15 (16). The number in each position is the input tied to that output. Outputs 5 through 16 are not present on the DXP 84 models.</p> <p>In this example, preset 15, audio Input 1 is tied to Output 3, Input 2 is tied to Output 1, and Input 6 is tied to Output 3. No input is tied to Output 4. Outputs 5 through 16 are not present on this switcher.</p>
View video room preset configuration	<code>[Esc][X6]*[X8]*01*1VC←</code>	<code>[X2]•[X2]•...•[X2]•Vid←</code>	Show room <code>[X6]</code> , preset <code>[X8]</code> video configuration. Show the input <code>([X2])</code> tied to 16 sequential outputs assigned to room <code>[X6]</code> , starting from Output 1.
<p><b>NOTE:</b> For all DXP models, the recommended starting output number is 1.</p>			

**NOTE:** `[X2]` = Input number (for ties)      0 – maximum number of inputs for your model  
`[X6]` = Room number (for room presets)      Each room can have up to 10 room presets (`[X8]`) assigned.  
`[X7]` = Global preset number      00 – 32. 00 = current preset  
`[X8]` = Room preset number      00 – current ties for the room in view mode, 10 maximum



Command	ASCII Command (Host to Switcher)	Response (Switcher to Host)	Additional Description																										
<b>View Ties and Presets (continued)</b>																													
View audio room preset configuration	<code>[Esc][X6]*[X8]*Ø1*2VC←</code>	<code>[X2]•[X2]•...•[X2]•Aud←</code>	Show room <code>[X6]</code> , preset <code>[X8]</code> audio configuration. Show input <code>[X2]</code> tied to 16 sequential outputs assigned to room <code>[X6]</code> , starting from Output 1.																										
<b>NOTE:</b> For all DXP models, the recommended starting output number is 1.																													
<b>Digital Sync Validation Processing (DSVP)</b>																													
View connections	<code>ØLS</code>	<code>[X23]<sup>1</sup>[X23]<sup>2</sup>[X23]<sup>3</sup>...[X23]<sup>n</sup>←</code>	Each <code>[X23]</code> response indicates presence or absence of sync on an input, starting from input 1. <i>n</i> is the maximum number of inputs on your model.																										
<b>I/O Grouping</b>																													
<b>NOTE:</b> The group that is assigned in each of the following I/O grouping commands ( <code>[X5]</code> ) must be 1, 2, 3, 4, or Ø (not grouped).																													
Write input grouping	<code>[Esc][X5]<sup>1</sup>[X5]<sup>2</sup>...[X5]<sup>n</sup>I←</code>	<code>Gri[X5]<sup>1</sup>[X5]<sup>2</sup>[X5]<sup>3</sup>...[X5]<sup>n</sup>←</code>	Each <code>[X5]</code> entry is the group number assigned to an input position, starting from input 1. <i>n</i> = the maximum number of inputs for this model.																										
<i>Example:</i> <b>DXP DVI Pro 88</b> <b>DXP HDMI 88</b>	<code>[Esc]4Ø...2I←</code>	<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;">Response #s = group:</div> <table border="0"> <tr> <td style="text-align: center;">4</td><td style="text-align: center;">Ø</td><td style="text-align: center;">1</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">Ø</td><td style="text-align: center;">Ø</td><td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">↓</td><td style="text-align: center;">↓</td><td style="text-align: center;">↓</td><td style="text-align: center;">↓</td><td style="text-align: center;">↓</td><td style="text-align: center;">↓</td><td style="text-align: center;">↓</td><td style="text-align: center;">↓</td> </tr> <tr> <td style="text-align: center;">Input: 1</td><td style="text-align: center;">Input: 2</td><td style="text-align: center;">Input: 3</td><td style="text-align: center;">Input: 4</td><td style="text-align: center;">Input: 5</td><td style="text-align: center;">Input: 6</td><td style="text-align: center;">Input: 7</td><td style="text-align: center;">Input: 8</td> </tr> </table> </div> <div style="margin-left: 20px;"> <table border="0"> <tr> <td style="text-align: center;">Input 1 in group 4</td> <td style="text-align: center;">Input 2 not grouped</td> <td style="text-align: center;">Input 8 in group 2</td> </tr> </table> <p>Input 1 – group 4 input 2 – group 0 (ungrouped) input 8 – group 2</p> </div>	4	Ø	1	3	3	Ø	Ø	2	↓	↓	↓	↓	↓	↓	↓	↓	Input: 1	Input: 2	Input: 3	Input: 4	Input: 5	Input: 6	Input: 7	Input: 8	Input 1 in group 4	Input 2 not grouped	Input 8 in group 2
4	Ø	1	3	3	Ø	Ø	2																						
↓	↓	↓	↓	↓	↓	↓	↓																						
Input: 1	Input: 2	Input: 3	Input: 4	Input: 5	Input: 6	Input: 7	Input: 8																						
Input 1 in group 4	Input 2 not grouped	Input 8 in group 2																											
Write output grouping	<code>[Esc][X5]<sup>1</sup>[X5]<sup>2</sup>...[X5]<sup>3</sup>O←</code>	<code>Gro[X5]<sup>1</sup>[X5]<sup>2</sup>[X5]<sup>3</sup>...[X5]<sup>n</sup>←</code>	Each <code>[X5]</code> entry is the group number assigned to an output position, starting from output 1. <i>n</i> = the maximum number of outputs for this model.																										
Read input grouping	<code>[Esc]I←</code>	<code>[X5]<sup>1</sup>[X5]<sup>2</sup>[X5]<sup>3</sup>...[X5]<sup>n</sup>←</code>	Each <code>[X5]</code> entry is the group number assigned to an input position, starting from Input 1. <i>n</i> = the maximum number of inputs for this model.																										
<i>Example:</i> <b>DXP DVI Pro 88</b> <b>DXP HDMI 88</b>	<code>[Esc]I←</code>	<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;">Response = group:</div> <table border="0"> <tr> <td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">Ø</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">Ø</td><td style="text-align: center;">Ø</td><td style="text-align: center;">Ø</td> </tr> <tr> <td style="text-align: center;">↓</td><td style="text-align: center;">↓</td><td style="text-align: center;">↓</td><td style="text-align: center;">↓</td><td style="text-align: center;">↓</td><td style="text-align: center;">↓</td><td style="text-align: center;">↓</td><td style="text-align: center;">↓</td> </tr> <tr> <td style="text-align: center;">Input: 1</td><td style="text-align: center;">Input: 2</td><td style="text-align: center;">Input: 3</td><td style="text-align: center;">Input: 4</td><td style="text-align: center;">Input: 5</td><td style="text-align: center;">Input: 6</td><td style="text-align: center;">Input: 7</td><td style="text-align: center;">Input: 8</td> </tr> </table> </div> <div style="margin-left: 20px;"> <table border="0"> <tr> <td style="text-align: center;">Input 1 in Group 1</td> <td style="text-align: center;">Input 3 Not Grouped</td> <td style="text-align: center;">Input 8 in Group 3</td> </tr> </table> </div>	1	1	Ø	3	3	Ø	Ø	Ø	↓	↓	↓	↓	↓	↓	↓	↓	Input: 1	Input: 2	Input: 3	Input: 4	Input: 5	Input: 6	Input: 7	Input: 8	Input 1 in Group 1	Input 3 Not Grouped	Input 8 in Group 3
1	1	Ø	3	3	Ø	Ø	Ø																						
↓	↓	↓	↓	↓	↓	↓	↓																						
Input: 1	Input: 2	Input: 3	Input: 4	Input: 5	Input: 6	Input: 7	Input: 8																						
Input 1 in Group 1	Input 3 Not Grouped	Input 8 in Group 3																											
Read output grouping	<code>[Esc]O←</code>	<code>[X5]<sup>1</sup>[X5]<sup>2</sup>[X5]<sup>3</sup>...[X5]<sup>n</sup>←</code>	Each <code>[X5]</code> entry is the group number assigned to an output position, starting at Output 1. <i>n</i> = the maximum number of outputs for this model.																										

<b>NOTE:</b>	<code>[X2]</code> = Input number (for ties)	<code>Ø</code> – maximum number of inputs for your model
	<code>[X5]</code> = Group number	1 – 4. Ø = ungrouped
	<code>[X6]</code> = Room number (for room presets)	Each room can have up to 10 presets ( <code>[X8]</code> ) assigned.
	<code>[X8]</code> = Room preset number	ØØ – current ties for the room in view mode, 1Ø maximum
	<code>[X23]</code> = Sync present	Ø = no sync detected; 3 = signal detected

Command	ASCII Command (Host to Switcher)	Response (Switcher to Host)	Additional Description
<b>Names</b>			
Write global preset name	<b>[Esc]</b> <b>[X7]</b> , <b>[X13]</b> NG ←	Nmg <b>[X7]</b> , <b>[X13]</b> ←	Assign global preset <b>[X7]</b> the name <b>[X13]</b> .
<i>Example:</i>	<b>[Esc]</b> 1, Security 1NG ←	Nmg01, Security 1 ←	Name global preset 1 Security 1.
Read global preset name	<b>[Esc]</b> <b>[X7]</b> NG ←	<b>[X13]</b> ←	View the name assigned to global preset number <b>[X7]</b> .
<i>Example:</i>	<b>[Esc]</b> 2NG ←	Security 2 ←	
Write room name	<b>[Esc]</b> <b>[X6]</b> , <b>[X13]</b> NR ←	Nmr <b>[X6]</b> , <b>[X13]</b> ←	Assign room preset <b>[X6]</b> the name <b>[X13]</b> .
<i>Example:</i>	<b>[Esc]</b> 1, Classrm 1NR ←	Nmr01, Classrm 1 ←	Name room 1 Classrm 1.
Read room name	<b>[Esc]</b> <b>[X6]</b> NR ←	<b>[X13]</b> ←	
Write room preset name	<b>[Esc]</b> <b>[X6]</b> * <b>[X8]</b> , <b>[X13]</b> NP ←	Nmp <b>[X6]</b> * <b>[X8]</b> , <b>[X13]</b> ←	
<i>Example:</i>	<b>[Esc]</b> 1*3, Podium_DVDNP ←	Nmp01*3, Podium_DVD ←	Name room 1, preset 3 Podium_DVD.
Read room preset name	<b>[Esc]</b> <b>[X6]</b> , <b>[X8]</b> NP ←	<b>[X13]</b> ←	
<b>NOTES:</b>			
<ul style="list-style-type: none"> <li>Do not use leading spaces in preset names.</li> <li>If a preset is unassigned, <b>[X13]</b> is [unassigned].</li> <li>If a global preset is saved, but not yet named, the default name is Preset <b>[X7]</b>.</li> <li>If a room preset is saved, but not yet named, the default name is Rm <b>[X6]</b> Prst <b>[X8]</b>.</li> </ul>			
Write input name	<b>[Esc]</b> <b>[X1]</b> , <b>[X13]</b> NI ←	Nmi <b>[X1]</b> , <b>[X13]</b> ←	Assign name <b>[X13]</b> to Input <b>[X1]</b> .
<i>Example:</i>	<b>[Esc]</b> 1, Podium camNI ←	Nmi1, Podium cam ←	Name Input 1 Podium cam.
Read input name	<b>[Esc]</b> <b>[X1]</b> NI ←	<b>[X13]</b> ←	View the name of Input <b>[X1]</b> .
Write output name	<b>[Esc]</b> <b>[X3]</b> , <b>[X13]</b> NO ←	Nmo <b>[X3]</b> , <b>[X13]</b> ←	Assign name <b>[X13]</b> to Output <b>[X3]</b> .
<i>Example:</i>	<b>[Esc]</b> 1, Main PJ1NO ←	Nmo1, Main PJ1 ←	Name Output 1 Main PJ1.
Read output name	<b>[Esc]</b> <b>[X3]</b> NO ←	<b>[X13]</b> ←	View the name of Output <b>[X3]</b> .
<b>Lock (Executive) Modes</b>			
<b>NOTE:</b> See “ <a href="#">Locking and Unlocking the Front Panel (Executive Modes)</a> ” on page 37 for more information on the lock modes.			
Lock all front panel functions	1X	Exe1 ←	Enable lock mode 1.
Lock advanced front panel functions	2X	Exe2 ←	Enable lock mode 2.
Unlock all front panel functions	0X	Exe0 ←	Enable lock mode 0.
View lock status	X	<b>[X4]</b> ←	

<b>NOTE:</b>	<b>[X1]</b> = Input number <b>[X3]</b> = Output number <b>[X4]</b> = Current front panel lock mode  <b>[X6]</b> = Room number (for room presets) <b>[X7]</b> = Global preset number <b>[X8]</b> = Room preset number <b>[X13]</b> = Name	1 – maximum number of inputs for your model 1 – maximum number of outputs for your model 0 = unlocked, 1 = all front panel functions locked, 2 = basic functions unlocked Each room can have up to 10 room presets ( <b>[X8]</b> ) assigned. 00 – 32. 00 = current configuration 00 – current ties for the room in view mode, 10 maximum Name of preset, room, input, or output <ul style="list-style-type: none"> <li>12 characters maximum for input, output, and global preset names</li> <li>11 characters maximum for room names</li> <li>Upper- and lowercase alphanumeric characters are valid.</li> </ul>
--------------	---	---

Command	ASCII Command (Host to Switcher)	Response (Switcher to Host)	Additional Description
<b>HDCP Authorization</b>			
<b>NOTE:</b> If the source requires HDCP authentication, ensure that HDCP authorization is set to On (the default).			
HDCP authorization on	<b>[Esc]</b> E <b>[X1]</b> *1HDCP←	HdcpE <b>[X1]</b> *1←	Set HDCP authorization to On for input <b>[X1]</b> .
HDCP authorization off	<b>[Esc]</b> E <b>[X1]</b> *ØHDCP←	HdcpE <b>[X1]</b> *Ø←	Disable HDCP for input <b>[X1]</b> .
Query HDCP authorization status	<b>[Esc]</b> <b>[X1]</b> *HDCP←	HdcpE <b>[X1]</b> * <b>[X24]</b> ←	Show HDCP authorization status <b>[X24]</b> for input <b>[X1]</b> .
<b>Resets</b>			
Reset global presets and names	<b>[Esc]</b> ZG←	Zpg←	Clear all global presets and their names.
Reset an individual global preset	<b>[Esc]</b> <b>[X7]</b> ZG←	Zpg <b>[X7]</b> ←	Clear global preset <b>[X7]</b> .
Reset all mutes	<b>[Esc]</b> ZZ←	Zpz←	Unmute all audio or video.
Reset room map	<b>[Esc]</b> ZR←	Zpr←	Clear all room definitions.
Reset individual room	<b>[Esc]</b> <b>[X6]</b> ZR←	Zpr <b>[X6]</b> ←	Delete room <b>[X6]</b> .
Reset all room presets and names	<b>[Esc]</b> ZP←	Zpp←	Clear all room presets and names.
Reset individual room preset and name	<b>[Esc]</b> <b>[X6]</b> * <b>[X8]</b> ZP←	Zpp <b>[X6]</b> * <b>[X8]</b> ←	Clear an individual room preset and name.
Reset whole switcher	<b>[Esc]</b> ZXXX←	Zpx←	Clear all ties and presets.
Absolute resets	<b>[Esc]</b> ZQQQ←	Zpq←	Similar to the <b>Reset whole switcher</b> command, plus clear the IP address to 192.168.254.254 and subnet mask to 255.255.000.000.
	<b>[Esc]</b> ZY←	Zpy←	Reset all settings <b>except</b> IP and gateway address, subnet mask, unit name, DHCP setting, and port mapping (Telnet, web, and direct access). This is recommended for after a firmware update.
<b>Information Requests</b>			
Information request	I	V <b>[X14]</b> X <b>[X15]</b> • A <b>[X14]</b> X <b>[X15]</b> ←	V <b>[X14]</b> X <b>[X15]</b> is the video matrix size. A <b>[X14]</b> X <b>[X15]</b> is the audio matrix size.
<i>Example:</i> <b>DXP 48 DVI Pro</b> <b>DXP 48 HDMI</b>	I	V4X8•A4X8←	The matrix consists of four video and audio inputs by eight video and audio outputs.

**NOTE:** **[X1]** = Input number  
**[X6]** = Room number (for room presets)  
**[X7]** = Global preset number  
**[X8]** = Room preset number  
**[X14]** = Total inputs  
**[X15]** = Total outputs  
**[X24]** = HDCP authorization status

1 – maximum number of inputs for your model  
Each room can have up to 10 presets (**[X7]**) assigned.  
00 – 32. 00 = current preset  
00 – current ties for the room in view mode, 10 maximum  
Total number of inputs for this switcher  
Total number of outputs for this switcher  
1 = HDCP authorization is on (default); 0 = authorization is off.

**NOTE:** If the source requires HDCP authentication, ensure that HDCP authorization is set to On (the default).

Command	ASCII Command (Host to Switcher)	Response (Switcher to Host)	Additional Description
<b>Information Requests (continued)</b>			
Request part number	N	60-nnn[n]-01←	DXP 44 DVI Pro = 60-875-01 DXP 48 DVI Pro = 60-1009-01 DXP 84 DVI Pro = 60-876-01 DXP 88 DVI Pro = 60-877-01 DXP 44 HDMI = 60-880-01 DXP 48 HDMI = 60-1010-01 DXP 84 HDMI = 60-881-01 DXP 88 HDMI = 60-882-01
<b>Firmware Version Queries:</b>			
<b>NOTE:</b> There are up to three separate sets of Extron firmware on which the switcher can report: the controller firmware, which is the overall control firmware; the Ethernet protocol firmware, which handles the Ethernet interface; and the latest optional Extron firmware update, which is available at <a href="http://www.extron.com">www.extron.com</a> .			
Query controller firmware version	Q	X21←	View firmware version X21 to the second decimal place.
Example:	Q	1.23←	The factory-installed controller firmware version is 1.23.
Query controller firmware version (verbose)	0Q	X21 - X22 - X22←	Provide a detailed status of the Ethernet protocol firmware, the controller firmware, and any firmware upgrade. The firmware that is running is marked by an asterisk (*). A caret (^) indicates that the firmware has a bad checksum or an invalid load. ?. ?? indicates that firmware is not loaded.
Example:	0q	(See below.)	
<b>Response:</b>	Description	* Indicates the Version Running	Upload Date and Time
	Ethernet Protocol Firmware	3.03-1.13(1.81-DXP Series -Wed, 16 Jan 2003 00:00:00 GMT)	1.13*(1.81-DXP Series -Thu, 02 Sep 2011 18:42:05 GMT)←
	DXP Firmware Version		Updated Firmware Version
Request system status	S	X16•X16•X17•X18•X4←	Display voltages X16, internal temperature X17, fan speed X18 (rpm), and power supply status X4.
Example:	S	3.29•4.85•+077.80•03750•1←	3.3 V Power System at 3.29 V Internal Temperature 77.80° F 5 V Power System at 4.85 V Power supply is on and Ok. Fan 1 rotating at 3750 RPM

<b>NOTE:</b>	X4 = Power supply status	0 = not OK, 1 = OK
	X16 = Voltage	Positive or negative voltage and magnitude
	X17 = Temperature	Degrees Fahrenheit
	X18 = Fan speed	In RPM
	X21 = Firmware version number	To second decimal place (n.nn)
	X22 = Verbose firmware version	Version-description-upload date and time

Command	ASCII Command (Host to Switcher)	Response (Switcher to Host)	Additional Description
<b>Information requests (continued)</b>			
<b>View File Directory Commands:</b>			
<b>NOTE:</b> The response to the View File Directory command differs, depending on whether the command is sent via an RS-232, RS-422, or Telnet connection, or via a web browser connection.			
View file directory RS-232/RS-422 port and Telnet	<b>[Esc]</b> DF←	<i>filename1,date/time,length</i> ↵ <i>filename2,date/time,length</i> ↵ <i>filename3,date/time,length</i> ↵ ... <i>filenamen,date/time,length</i> ↵	List user-supplied files. <i>space_remaining Bytes·Left</i> ↵↵
View file directory web browser	<b>[Esc]</b> DF←	Var file = new array (); File [1] = ' <i>filename1,date1,filesize1</i> '; File [2] = ' <i>filename2,date2,filesize2</i> '; File [3] = ' <i>filename3,date3,filesize3</i> '; ... File [ <i>n</i> ] = ' <i>filenamen,daten,filesize</i> '; File [ <i>n</i> +1] = <i>space_remainingBytes·Left</i>	List user-supplied files.
Erase user-supplied web pages or files	<b>[Esc]</b> <i>filename</i> EF←	Del <i>filename</i> ↵	
<b>EDID (Extended Display Identification Data) Commands</b>			
Assign EDID data to an input	<b>[Esc]</b> A <b>[X1]*[X19]</b> EDID←	EdidA <b>[X1]*[X19]</b> ↵	Assign EDID file <b>[X19]</b> to input <b>[X1]</b> .
Assign EDID data to all inputs	<b>[Esc]</b> A <b>[X19]*</b> EDID←	EdidA <b>ØØ*</b> [X19]↵	Assign EDID information files to all inputs. See the <b>EDID Table</b> on page 53 for the values for each EDID file.
Save output 1 EDID to user location (User-assigned file 37–40)	<b>[Esc]</b> S <b>[X19]</b> EDID←	EdidS <b>[X19]</b> ↵	Store the EDID of Output 1 as user-assigned EDID file <b>[X19]</b> . <b>[X19] = 37 – 4Ø</b> .
Export EDID file data	<b>[Esc]</b> E <b>[X19]</b> EDID←	<b>[X20]</b> ↵	Export binary data <b>[X20]</b> contained in EDID file <b>[X19]</b> to the computer.
Import EDID file to a user file location	<b>[Esc]</b> I <b>[X19]</b> EDID← <b>[X20]</b>	EdidI <b>[X19]</b>	Import EDID file binary data <b>[X20]</b> to user-assigned EDID file <b>[X19]</b> . <b>[X19] = 37 – 4Ø</b> .
View EDID input data assignment	<b>[Esc]</b> A <b>[X1]</b> EDID←	<b>[X19]</b> ↵	View the number of the EDID file assigned to Input <b>[X1]</b> .

**NOTE:** **[X1]** = Input number  
**[X3]** = Output number  
**[X10]** = HDCP status  
**[X19]** = EDID file reference number  
**[X20]** = EDID file data block

1 – maximum number of inputs for your model  
1 – maximum number of outputs for your model  
Ø = No input or output is connected.  
1 = Input or output is connected and is HDCP compliant.  
2 = Input or output is connected but is not HDCP compliant.  
Ø1 – 4Ø (32 = default 720p @ 60 Hz). See the **EDID Table** on page 53.  
256 bytes of binary data

Command	ASCII Command (Host to Switcher)	Response (Switcher to Host)	Additional Description
<b>HDCP Query Commands</b>			
View HDCP for an individual input	<b>[Esc] I [X1] HDCP ←</b>	<b>[X10] ←</b>	Show HDCP status <b>[X10]</b> for Input <b>[X1]</b> .
View HDCP for an individual output	<b>[Esc] O [X3] HDCP ←</b>	<b>[X10] ←</b>	View HDCP status <b>[X10]</b> for Output <b>[X3]</b> .
View HDCP status for all inputs	<b>[Esc] I *HDCP ←</b>	<b>[X10]<sup>1</sup> [X10]<sup>2</sup> . . . [X10]<sup>n</sup> ←</b>	View HDCP status for all inputs
View HDCP status for all outputs	<b>[Esc] O *HDCP ←</b>	<b>[X10]<sup>1</sup> [X10]<sup>2</sup> . . . [X10]<sup>n</sup> ←</b>	View HDCP status for all outputs

**NOTE:** **[X1]** = Input number  
**[X3]** = Output number  
**[X10]** = HDCP status

1 – maximum number of inputs for your model  
1 – maximum number of outputs for your model  
∅ = No input or output is connected.  
1 = Input or output is connected and is HDCP compliant.  
2 = Input or output is connected but is not HDCP compliant.

## IP-specific SIS Commands

### Symbol Definitions for IP-specific Commands

**X30** = Matrix name Up to 24 alphanumeric characters, including hyphens

**NOTE:** The following characters are invalid or not recommended in the name:  
{space} ~ , @ = ` [ ] { } < > ' ' " " ; : | \ and ?

**X31** = Default name Factory default name (model name + last three pairs of the MAC address)

**X32** = Time and date (for set) In the format *MM/DD/YY•HH:MM:SS*, where:  
*MM* = month: 01 (January) through 12 (December)  
*DD* = 01 through 31  
*YY* = 00 through 99  
*HH* = 00 through 23  
*MM* = 00 through 59  
*SS* = 00 through 59

**X33** = Time and date (for read) In the format *Day,•DD•Mmm•YYYY•HH:MM:SS*:  
*Day* = weekday: Mon through Sun  
*DD* = 01 through 31  
*Mmm* = month: Jan through Dec  
*YYYY* = 2000 through 2099  
*HH* = 00 through 23  
*MM* = 00 through 59  
*SS* = 00 through 59

**X34** = GMT offset -12.0 through +14.0. Hours and minutes removed from GMT

**X35** = Daylight Saving Time 0 = Daylight Saving Time off or ignore  
1 = Daylight Saving Time on (northern hemisphere)  
2 = Daylight Saving Time on (Europe)  
3 = Daylight Saving Time on (Brazil)

**X36** = IP address *nnn.nnn.nnn.nnn*

**X37** = Hardware (MAC) address *nn-nn-nn-nn-nn-nn*

**X38** = Number of open connections 0 through 255

**X39** = Password 12 alphanumeric characters

**NOTE:** The following characters are invalid or not recommended in passwords:  
{space} + ~ , @ = ` [ ] { } < > ' ' " " ; : | \ and ?.

**X40** = E-mail domain name Standard domain name rules apply (for example: *nnnnn@xxx.com*)

**NOTES:**

- The following characters are invalid or not recommended in a domain name:  
{space} + ~ , = ` [ ] { } < > ' ' " " ; : | \ and ?.
- The @ character is acceptable only as the lead-in to the domain name (such as *@extron.com*).

**X41** = E-mail account 65 through 72  
65 = recipient 1, 66 = recipient 2, ..., 72 = recipient 8

**X42** = E-mail recipient address Typical e-mail address format (*nnnn@xxx.com*)

**X43** = Notification selections, part 1  
I = inputs  
F = fans  
P = power supply

**X44** = Notification selections, part 2  
If **X43** = I, then: **X44** = 0 (all inputs) or 1 through 8 (input 1 through input 8)

If **X43** = F, then: **X44** = 00 (all fans)

If **X43** = P, then: **X44** = 00 (both power supplies)

<b>X45</b>	= Notify when?	Ø = no response 1 = fail or missing 2 = fixed or restored 3 = both 1 and 2 4 = suspend
<b>X46</b>	= DHCP	Ø = off, 1 = on
<b>X47</b>	= Port number	Ø1 through 99 (two ASCII characters)
<b>X48</b>	= Baud rate	9600, 19200, 38400, 115200
<b>X49</b>	= Parity required)	o <u>dd</u> , e <u>ven</u> , <u>n</u> one, <u>m</u> ark, <u>s</u> pace (only the first letter)
<b>X50</b>	= Data bits	7, 8 (default = 8)
<b>X51</b>	= Stop bits	1, 2 (default = 1)
<b>X52</b>	= Port type	Ø = RS-232 1 = RS-422
<b>X53</b>	= Verbose mode	Ø = clear/none (default for Telnet connection) 1 = verbose mode (default for RS-232 or RS-422 connection) 2 = tagged responses for queries 3 = verbose mode and tagged for queries

**NOTE:** If tagged responses is enabled (modes 2 and 3), all read commands return the constant string and the value as the set command does (for example, the read matrix name command `[Esc]CN←`, returns `Ipn•[X30]←`).

<b>X54</b>	= Port timeout interval (in 10 second increments)	1 (= 10 seconds) through 65000 (Default is 30 = 300 seconds = 5 minutes)
<b>X55</b>	= Time (in 10 ms increments) to wait for characters	10 (= 100 ms, default) through 32767
<b>X56</b>	= Time (in 10 ms increments) to wait between characters	2 (= 20 ms, default) through 32767



## Command and Response Table for IP-Specific SIS Commands

Command	ASCII Command (Host to Switcher)	Response (Switcher to Host)	Additional Description
<b>IP Setup Commands</b>			
Set matrix name	<code>Esc[X30]CN←</code>	<code>Ipn•[X30]←</code>	[X30] can be up to 24 alphanumeric characters or hyphens (-). The last character <b>cannot</b> be a hyphen.
Read matrix name	<code>EscCN←</code>	<code>[X30]←</code>	
Reset matrix name to factory default	<code>Esc•CN←</code>	<code>Ipn•[X30]←</code>	
Set time and date	<code>Esc[X32]CT←</code>	<code>Ipt[X32]←</code>	
Read time and date	<code>EscCT←</code>	<code>[X33]←</code>	
Set GMT offset	<code>Esc[X34]CZ←</code>	<code>Ipz[X34]←</code>	In the command, the divider between hours and minutes can be a colon or a period. In the response, it is a colon.
<i>Example:</i>	<code>Esc8.0CZ←</code>	<code>Ipz+08:00←</code>	
Read GMT offset	<code>EscCZ←</code>	<code>[X34]←</code>	
Set Daylight Saving Time	<code>Esc[X35]CX←</code>	<code>Ipx[X35]←</code>	
Read Daylight Saving Time	<code>EscCX←</code>	<code>[X35]←</code>	
Set IP address	<code>Esc[X36]CI←</code>	<code>Ipi[X36]←</code>	
Read IP address	<code>EscCI←</code>	<code>[X36]←</code>	
Read hardware address	<code>EscCH←</code>	<code>[X37]←</code>	
Read number of open connections	<code>EscCC←</code>	<code>Icc[X38]←</code>	
Set subnet mask	<code>Esc[X36]CS←</code>	<code>Ips[X36]←</code>	
Read subnet mask	<code>EscCS←</code>	<code>[X36]←</code>	
Set gateway IP address	<code>Esc[X36]CG←</code>	<code>Ipg[X36]←</code>	
Read gateway IP address	<code>EscCG←</code>	<code>[X36]←</code>	
Set administrator password	<code>Esc[X39]CA←</code>	<code>Ipa•[X39]←</code>	
Read administrator password	<code>EscCA←</code>	<code>[X39]←</code>	
Reset (clear) administrator password	<code>Esc•CA←</code>	<code>Ipa•←</code>	
Set user password	<code>Esc[X39]CU←</code>	<code>Ipu•[X39]←</code>	
Read user password	<code>EscCU←</code>	<code>[X39]←</code>	
Reset (clear) user password	<code>Esc•CU←</code>	<code>Ipu•←</code>	
Set mail server, domain name	<code>Esc[X36],[X40],[X39]CM←</code>	<code>Ipm[X36],[X40],[X39]←</code>	
Read mail server, domainname	<code>EscCM←</code>	<code>[X36],[X40],[X39]←</code>	
Set e-mail recipient	<code>Esc[X41],[X42],CR←</code>	<code>Ipr[X41],[X42]←</code>	This command sets the recipient of the e-mail. To receive e-mail notifications, you must then set the events that the switcher reports, using one or more separate <b>Set e-mail events (EM)</b> commands (see the example below).
<i>Example:</i>	<code>Esc72,Jsmith@folklore.netCR←</code>	<code>Ipr72,Jsmith@folklore.net,←</code>	
View e-mail recipient	<code>Esc[X41]CR←</code>	<code>[X42],←</code>	Show e-mail recipient address [X42] for e-mail account [X41].

Command	ASCII Command (Host to Switcher)	Response (Switcher to Host)	Additional Description
<b>IP Setup Commands (continued)</b>			
Set e-mail events for recipient	<code>Esc[X43][X41], [X44], [X45]EM ←</code>	<code>[X45], [X45], . . . , [X45]</code>	You must first have set an e-mail recipient for the e-mail account number ( <code>[X41]</code> ), using the separate <b>Set e-mail recipient (CR)</b> command. E-mail account #72 (recipient 8), JSmith, will receive fail/missing and fixed/restored messages for all inputs.
<i>Example:</i>	<code>Esc I ([X43]) 72[X41], 0 ([X44]), 3 ([X45]) EM ←</code>	<code>IpeI*72*0*3 ←</code>	
Set DHCP on or off	<code>Esc[X46]DH ←</code>	<code>Idh[X46] ←</code>	
Read DHCP on/off status	<code>Esc DH ←</code>	<code>[X46] ←</code>	
Set serial port parameters	<code>Esc[X47]*[X48], [X49], [X50], [X51]CP ←</code>	<code>Cpn[X47]*Ccp[X48], [X49], [X50], [X51] ←</code>	
Read serial port parameters	<code>Esc[X47]CP ←</code>	<code>[X48], [X49], [X50], [X51] ←</code>	
Configure receive timeout	<code>Esc[X47]*[X54], [X55]CE ←</code>	<code>Cpn[X47]*Cce[X54], [X55] ←</code>	
Read receive timeout	<code>Esc CE</code>	<code>[X54], [X55] ←</code>	
Set mode	<code>Esc[X47]*[X52]CY ←</code>	<code>Cpn[X47]*Cty[X52] ←</code>	
Read mode	<code>Esc[X47]CY ←</code>	<code>[X52] ←</code>	
Set verbose mode	<code>Esc[X53]CV ←</code>	<code>Vrb[X53] ←</code>	
Read verbose mode	<code>Esc CV ←</code>	<code>[X53] ←</code>	
Configure current port timeout	<code>Esc 0*[X56]TC ←</code>	<code>Pti0*[X56] ←</code>	
Read current port timeout	<code>Esc 0TC ←</code>	<code>[X56] ←</code>	
Configure global IP port timeout	<code>Esc 1*[X56]TC ←</code>	<code>Pti1*[X56] ←</code>	
Read global IP port timeout	<code>Esc 1TC ←</code>	<code>[X56] ←</code>	

# Matrix Software

This section discusses the following topics:

- **Matrix Switchers Control Program**
- **Using the Button Label Generator**

The following software programs accompany the DXP DVI Pro and DXP HDMI switchers:

- The Extron Matrix Switcher Control Program, which communicates with the switcher via the RS-232/RS-422 port and the Ethernet port, and provides an easy way to set up ties and sets of ties
- The Extron Button Label Generator, which enables you to design and print labels for the DXP front panel buttons

Both programs are compatible with Windows 2000, Windows XP, and later versions of Windows. Updates to these programs can be downloaded from the Extron web site (<http://www.extron.com>).

## Matrix Switchers Control Program

### Installing the Software

The Matrix Switchers Control Program is contained on a DVD. To install the software from the DVD to your computer hard drive, load the DVD in your computer. The disc should start automatically (if it does not, run Launch.exe from the DVD drive). Follow the instructions that appear on the screens. The Matrix software program occupies approximately 1 MB of hard-drive space.

By default, the software installation creates a `C:\Program Files\Extron\Matrix Software` directory and places two files (MATRIX Switcher + Control Program [MTRX.exe] and MATRIX Switcher + Help [MTRX.hlp]) in it. •

- NOTES:**
- The program controls most Extron matrix switchers; however, its operation is limited to the features and configuration of your DXP.
  - The DXP switcher can support either RS-232 or RS-422 serial communication protocol from the rear panel Remote RS232/RS422 port, and RS-232 from the front panel Config port. The DXP operates at 9600, 19200, 38400, or 115200 baud rates. See “**Selecting the RS-232/RS-422 Protocol and Baud Rate (Rear Panel)**” on page 42 to configure the Remote RS232/RS422 and Config ports using the front panel buttons.

## Software Operation Via Ethernet

When a DXP switcher is connected to an Ethernet WAN or LAN, any number of users can operate it, locally or remotely, using the Matrix Switcher Control Program. See “[Ethernet Connection](#)” on page 9 for connection details.

Connection to the switcher via Ethernet can be password protected. There are two levels of password protection: administrator and user. Administrators have full access to all DXP switching capabilities and editing functions. Users can select inputs and outputs, set and recall presets, and view all settings with the exception of passwords. If the same password or no password is required for logging on, all personnel are logged on with administrator privileges. Fields and functions that exceed user privileges are grayed out in the control program when the operator is logged on as a user.

### Ethernet protocol settings

The [IP Settings/Options screen](#) (shown on page 77) provides a location for viewing and, if connected via the RS-232 or RS-422 link or if you are logged on via the Ethernet port as an administrator, editing settings unique to the Ethernet interface (see “[IP Setup](#)” on page 77 for more details).

## Special Characters

The HTML language reserves certain characters for specific functions. The switcher does not accept these characters in preset names, the switcher name, passwords, or locally created file names. Use of the following characters is **not** recommended: {space} (spaces can be used in names) + ~ , @ = ` [ ] { } < > ‘ ’ “ ” ; : | \ and ?.

## Using the Software

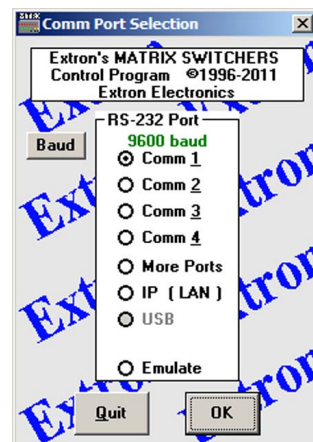
Many items in the Matrix Switcher Control Program are also accessible via front panel controls (see the “[Operation](#)” section, starting on page 11), under SIS control (see the “[SIS Configuration and Control](#)” section, starting on page 47), and via the web pages (see the “[HTML Operation](#)” section, starting on page 101). The Matrix Switcher Help Program provides information on settings and on how to use the control program, itself.

1. To run the Matrix Switcher Control Program, click on the **Matrix Switcher + Control Pgm** icon (shown at right) in the Extron Electronics group or folder in the **Start** menu. You can access this icon by selecting:



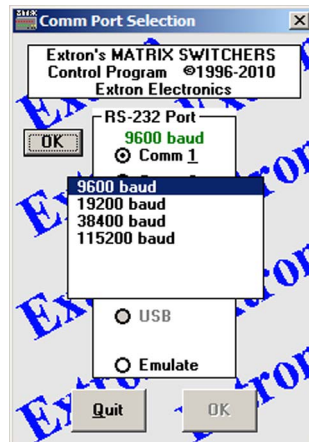
**Start > All Programs > Extron Electronics > Matrix Switchers > Matrix Switcher + Control Program**

The Comm Port Selection window opens.



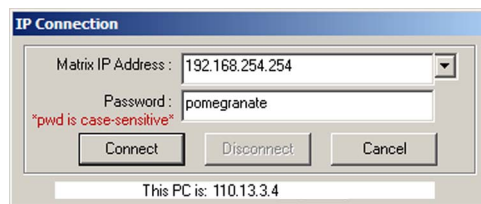
**Figure 70.** Comm Port Selection Window

2. Choose the communication port through which the DXP is connected to the computer:
  - **If you selected a Comm port**, check the baud rate displayed in the Comm Port Selection window. To change the baud rate, click the **Baud** button to display the baud rate pop-up list. (After you click it, this button changes to **OK**.) Double-click on the desired baud rate (available rates are 9600, 19200, 38400, and 115200; the default is 9600), then click **OK** and proceed to step 4.



**Figure 71. Baud Rate Pop-up List**

- **If you selected IP [LAN]**, click **OK** and proceed to step 3.
  - **If you selected Emulate**, click **OK** and see “[Using Emulation Mode](#)” on page 97.
3. **If you selected IP [LAN] in step 2**, the IP Connection window opens.



**Figure 72. Address and Password Entry for IP Connection**

- a. Check the **Extron IP Address** field in the IP Connection window. The field displays the last Extron IP address entered.
  - If the IP address is correct:** Proceed to step 3b.
  - If the address is not correct:** Either click in the **Extron IP Address** field and enter the IP address or click on the scroll down button (▾) and select from among the recently used addresses.

**NOTE:** If your local system administrators have not changed the value, the factory-specified default address, 192.168.254.254, is the correct value for this field.

- b. If the DXP is password protected, click in the **Password** field and enter the appropriate administrator or user password.

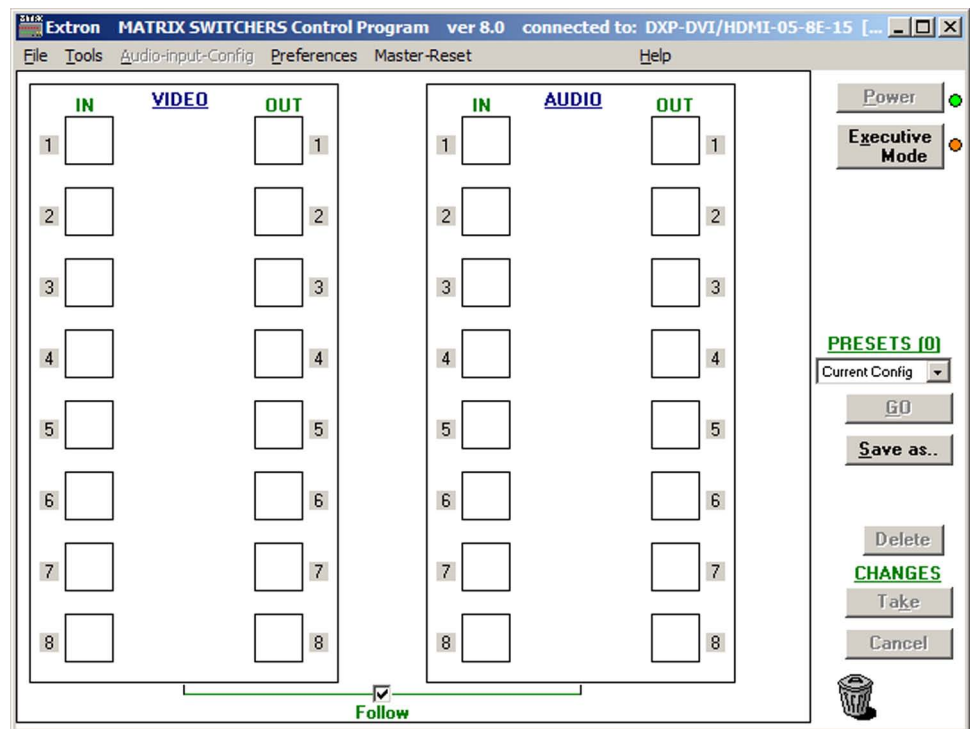
c. Click **Connect**.

- If you logged on using the administrator password, the program connects you to the DXP switcher with all of the administrator rights and privileges.
- If you logged on with the user password, the program connects you to the DXP switcher with only user capabilities.

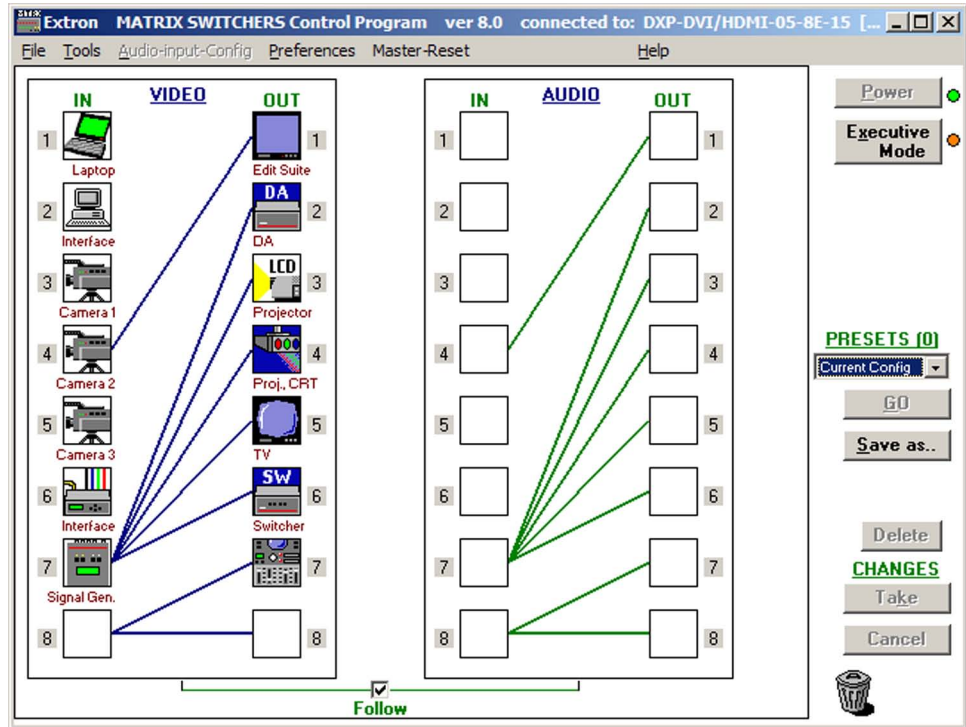
If an incorrect password is entered, the program beeps and returns to the password entry display for you to enter another password.

4. The Extron Matrix Switchers Control Program matrix window appears. The window displays the current configuration of the attached matrix, with numbered boxes representing the video inputs and outputs.

**NOTE:** Figures 73 (below) and 74 (on the next page) show a DXP 88 model, which has 8 inputs and 8 outputs. The window for the DXP 88 has 8 input boxes and 8 output boxes each for audio and video.



**Figure 73.** Extron Matrix Switcher Control Program Matrix Window (No Ties)

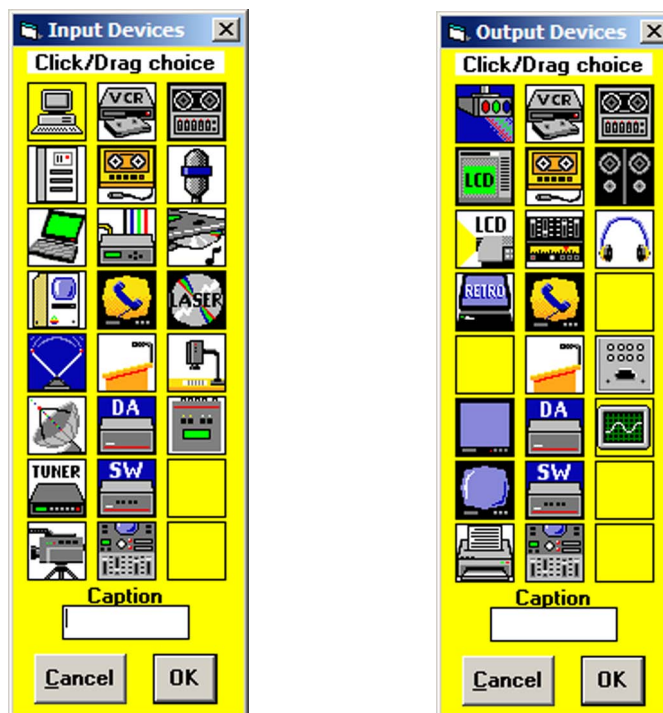


**Figure 74. Sample Matrix Window with Ties**

## Setting Up the Matrix Window

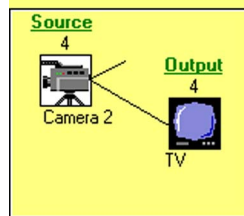
On the matrix window, the inputs and outputs are represented by boxes. You can assign icons that represent your connected devices to each numbered input and output box.

1. Click on an input or an output box. The Input Devices or Output Devices dialog box opens, providing icons for devices that can be connected to a switcher.



**Figure 75. Input Devices and Output Devices Icon Windows**

2. Click and drag an icon from the devices screen to an input or output box on the matrix window. Repeat for additional devices as desired.
3. In the **Caption** box, enter a caption for the device, if desired (for example, **Camera 2**). This caption appears in the descriptive window that pops up when you pass the cursor over an input or output box containing an icon (see the example below).



**Figure 76. Pop-up Window for Input 4 Containing a Caption**

4. When finished assigning icons, click **OK** to close the device window.
  - **To change an icon** in an input or output box, drag the new icon to the box. It replaces the previous one.
  - **To remove an icon from a box and leave the box empty**, drag an empty square to the box.

Alternatively, you can display the input and output numbers in the boxes instead of icons. To do this, select **Numbers in I/O Boxes** from the **Preferences** pull-down menu.

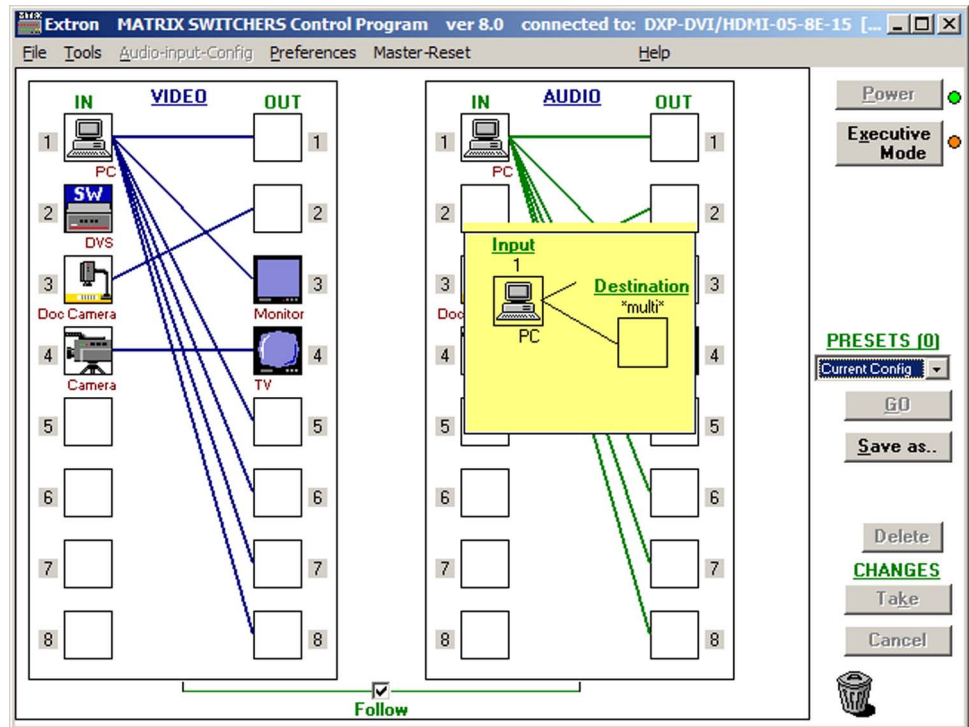
## Managing Ties

On the matrix window, you can create, dissolve, and view input-to-output ties as follows:

- **To create a tie**, click and drag from an input box to an output box.
  - **If Hold/Verify Changes has been selected from the Preferences menu:**  
A broken line appears, connecting the two boxes. If you want to undo the preliminary tie at this point, click the **Cancel** button. The broken line disappears. Click **Take** to confirm the tie. The broken line becomes solid.
  - **If Immediate Changes has been selected from the Preferences menu:**  
The tie is made immediately. No **Cancel** button is displayed.
- **To create a quick multiple tie**, drag the desired input box to the word **“Out”** above the output column. The input is tied to all the outputs.
- **To remove a tie**, drag the output box to its tied input box or to the trash can.
  - **If Hold/Verify Changes has been selected from the Preferences menu:**  
The tie line becomes broken. If you want to reinstate the tie at this point, click **Cancel**. The broken line becomes solid again. Click **Take**. The broken tie line disappears.
  - **If Immediate Changes has been selected from the Preferences menu:**  
The tie is undone immediately.



- **To view information on a specific input or output device**, position the cursor over that device in the matrix window. A pop-up window opens, showing the input and output numbers, names (if captions were specified), details on the connections to that device, and the frequency of the video signal being sent to or from it.



**Figure 77.** Matrix Window with Pop-up Information on Audio Input 1

## IP Setup

The IP Settings/Options window lets you view and, if connected via the RS-232 or RS-422 link or logged on via the Ethernet port as an administrator, edit settings unique to the Ethernet interface. To display the IP Settings/Options window, select **IP Options** from the **Tools** pull-down menu.

	E-mail Addressee	None	Fail	Fixed	Both	Missing Input(s)	Power Supply
1	Hpottter@folklore.net	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	MStandish@folklore.net	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	FBaggins@folklore.net	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>	<input type="checkbox"/>
6		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Figure 78.** IP Settings/Options Window

**CAUTION:** Editing the following fields on the IP Settings/Options screen while connected via the Ethernet port can immediately disconnect your computer from the switcher:

- **IP Address**
- **Gateway IP Address**
- **Subnet Mask**
- **Use DHCP**
- **Administrator Password**

**NOTES:**

- Extron recommends editing the settings on this screen using the RS-232 or RS-422 link and protecting the Ethernet access to this screen by assigning an administrator password to qualified and knowledgeable personnel only.
- When the control program is connected to the DXP via RS-232 or RS-422, the **Administrator Password** and **User Password** fields are not masked. If a password has been inadvertently changed to an unknown value, you can look up and, if desired, change a password in this window without knowing the current password.

See “**IP Addressing**” on page 127 for basic information about IP addresses.

## Setting the IP address

The **Matrix IP Address** field contains the IP address of the connected matrix switcher. This value is encoded in the flash memory on the switcher.

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric sub-fields separated by periods. Each field can be numbered from 000 through 255. Leading zeros, up to three digits total per field, are optional. Values of 256 and above are invalid.

The default address is 192.168.254.254, but if this conflicts with other equipment, you can change the IP address to any valid value.

Edit the address field as follows:

1. Click in the **Matrix IP Address** field. The graphic cursor becomes a text cursor.
2. Make any desired changes to the address.
3. Press the <Tab> key on the keyboard or click in another field to exit the **Matrix IP Address** field.
4. Click the **Take** button for the address change to take effect.

**NOTE:** Editing the **IP Address** field while connected via Ethernet can immediately disconnect your computer from the DXP. It is recommended that you connect via RS-232 or RS-422 to edit this field.

## Setting the Extron name or descriptor

The **Extron Name/Descriptor** field contains the name used as the “from” information when the DXP switcher e-mails notification of its failed or repaired status. The default name or descriptor shown in this field is a portion of your product name, followed by the last six characters of the unit MAC address (for example, DXP-DVI/HDMI-05-A6-2D).

This descriptor can be changed to any valid name, up to 24 alphanumeric characters or hyphens.

**NOTE:** The following characters are invalid or not recommended in the **Extron Name/Descriptor** field: + ~ , @ = ` [ ] { } < > ‘ ’ “ ” ; : | \ ? and {space}.

Edit the **Extron Name/Descriptor** field as follows:

1. Click in the **Extron Name/Descriptor** field. The graphic cursor becomes a text cursor.
2. Edit the name as desired.
3. Press the <Tab> key on the keyboard or click in another field to exit the **Extron Name/Descriptor** field.
4. Click the **Take** button for the name change to take effect.

## Setting the gateway IP address

The **Gateway IP Address** field identifies the IP address of the gateway to the mail server to be used if the DXP switcher and the mail server are not on the same subnet (see “[Setting the IP address](#),” above, for the valid address format).

Edit this field as follows:

1. Click in the **Gateway IP Address** field. The graphic cursor becomes a text cursor.
2. Make any desired changes to the address.
3. Press the <Tab> key on the keyboard or click in another field to exit the **Gateway IP Address** field.

4. Click the **Take** button for the address change to take effect.

**NOTE:** Editing the **Gateway IP Address** field while connected via Ethernet can immediately disconnect your computer from the DXP. It is recommended that you connect via RS-232 or RS-422 to edit this field.

### Setting the subnet mask

The **Subnet Mask** field is used to determine whether the DXP is on the same subnet as the controlling PC or the mail server when you are subnetting. The subnet mask has the same format as the matrix switcher IP and gateway addresses (*nnn.nnn.nnn.nnn*).

For more information, see "[Subnetting, a Primer](#)" on page 131.

Edit this field as follows:

1. Click in the **Subnet Mask** field. The graphic cursor becomes a text cursor.
2. Make any desired changes to the mask.
3. Press the <Tab> key on the keyboard or click in another field to exit the **Subnet Mask** field.
4. Click the **Take** button for the changes to the mask to take effect.

**NOTE:** Editing the **Subnet Mask** field while connected via Ethernet can immediately disconnect your computer from the DXP. It is recommended that you connect via RS-232 or RS-422 to edit this field.

### Hardware Address field

The hardware (MAC) address consists of six pairs of alphanumeric characters in the format *xx-xx-xx-xx-xx-xx*. The MAC address is hard coded in the DXP switcher and cannot be changed.

### Enabling and disabling DHCP

Selecting the **Use DHCP** check box directs the DXP to ignore any entered IP addresses and to obtain its IP address from a Dynamic Host Configuration Protocol (DHCP) server (if the network is DHCP capable). Contact the local system administrator for information about DHCP on your system.

**NOTE:** Selecting or deselecting this check box while connected via Ethernet can immediately disconnect your computer from the DXP. It is recommended that you connect via RS-232 or RS-422 to edit this field.

### Setting the date

The **Date** field displays the current date in the Greenwich Mean Time (GMT) zone. If necessary, adjust the date as follows:

1. Click in the field. A date editing field appears, displaying the date in the format *M(M)/D(D)/YYYY*. Leading zeros are not used. The graphic cursor becomes a text cursor in the date editing field.
2. Edit the field as desired to set the proper date. Leading zeros are optional.
3. Press the <Tab> key on the keyboard or click in another field to exit the **Date** field.
4. Click the **Take** button for the date change to take effect.

## Setting the local time

The **Time** (local) field displays the current time in the local time zone. If necessary, click the **Sync Time to PC** button to set the switcher to the internal time on your computer, or adjust the time manually as follows:

1. Click in the **Time** (local) field. A time editing field appears with the date in the format *HH:MM:SS (00:00:00 to 23:59:59)*. The graphic cursor becomes a text cursor in the time editing field.
2. Edit the field as desired to set the proper time. Remember to use 24-hour time. Leading zeros are optional.
3. Press the <Tab> key or click in another field to exit the **Time** field.
4. Click the **Take** button for the time change to take effect.

## Sync Time to PC button

Clicking the **Sync Time to PC** button causes the computer you are operating to send its internal time to the switcher in a set time command.

## Setting the offset from GMT

The **GMT** field displays the amount of hours and minutes that the local time varies from the GMT international time reference. If necessary, adjust the offset as follows:

1. Click in the **GMT** field. An offset editing field appears with the offset in the format *±HH:MM (-12:00 to +14:00)*. The graphic cursor becomes a text cursor in the set offset field.
2. Edit the field as desired to set the proper offset. Leading zeros are optional. Some time zones are on the half-hour (30 minutes).
3. Press the <Tab> key or click in another field to exit the set offset field.
4. Click the **Take** button for the offset change to take effect.

## Enabling daylight savings time

When daylight savings time is enabled, the switcher updates its internal clock between daylight savings time and standard time in the spring and fall on the date that the time change occurs in your location. When daylight savings time is turned off, the switcher does not adjust its time reference.

Select the **Use Daylight Savings** check box to enable daylight savings time.

## Setting the administrator password

The **Administrator Password** field displays the password required to log on to the DXP switcher via the Ethernet port with all administrator rights and privileges. Passwords are case-sensitive and are limited to 12 uppercase and lowercase alphanumeric characters.

While you are logged on as a user, this field is masked with asterisks (\*\*\*\*\*) as a security measure.

- NOTES:**
- The following characters are invalid or not recommended in passwords:  
+ ~ , @ = ` [ ] { } < > ' ' " " ; : | \ ? and {space}.
  - Editing the **Administrator Password** field while connected via Ethernet can immediately disconnect your computer from the DXP. It is recommended that you connect via RS-232 or RS-422 to edit this field.

Edit **Administrator Password** field as follows:

1. Click in the **Administrator Password** field. The graphic cursor becomes a text cursor.
2. Make any desired changes to the case-sensitive password.
3. Press the <Tab> key on the keyboard or click in another field to exit the **Administrator Password** field.
4. Click the **Take** button for the password change to take effect.

### Setting the user password

The **User Password** field displays the password required to log on to the DXP switcher via the Ethernet port as a user, without all administrator rights and privileges. Passwords are case-sensitive and are limited to 12 uppercase and lowercase alphanumeric characters.

While you are logged on as a user, this field is masked with asterisks (\*\*\*\*\*) as a security measure.

**NOTES:**

- An administrator password must be created before a user password can be created.
- The following characters are invalid or not recommended in passwords:  
+ ~ , @ = ` [ ] { } < > ' ' " " ; : | \ ? and {space}.

Edit this field as follows:

1. Click in the **User Password** field. The graphic cursor becomes a text cursor.
2. Make any desired changes to the case-sensitive user password.
3. Press the <Tab> key on the keyboard or click in another field to exit the **User Password** field.
4. Click the **Take** button for the password change to take effect.

### Setting the mail server IP address

The **Mail Server IP Address** field displays the IP address of the mail server that handles the e-mail for the facility in which the DXP switcher is installed (see “[Setting the IP address](#)” on page 78 for the valid address format).

Edit this field as follows:

1. Click in the **Mail Server IP Address** field. The graphic cursor becomes a text cursor.
2. Make any desired changes to the mail server IP address.
3. Press the <Tab> key on the keyboard or click in another field to exit the mail server IP address field.
4. Click the **Take** button for the address change to take effect.

### Setting the mail server domain name

The **Mail Server Domain Name** field displays the domain name that the DXP switcher uses to log on to the e-mail server. Standard domain conventions (such as xxxxx@xxx.com) apply.

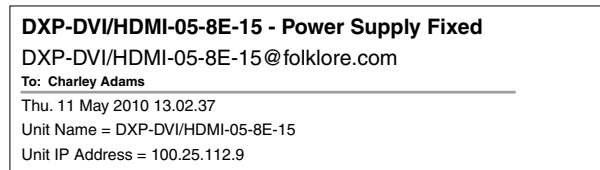
**NOTE:** The following characters are invalid or not recommended in a domain name:  
+ ~ , @ = ` [ ] { } < > ' ' " " ; : | \ ? and {space}. The @ character is acceptable only as the lead-in to the domain name (such as @folklore.net).

Edit the **Mail Server Domain Name** field as follows:

1. Click in the **Mail Server Domain Name** field. The graphic cursor becomes a text cursor.
2. Edit the name as desired.
3. Press the <Tab> key on the keyboard or click in another field to exit the **Mail Server Domain Name** field.
4. Click the **Take** button for the name change to take effect.

### Entering e-mail addressee information

The eight **E-mail Addressee** fields permit the administrator to identify the e-mail addresses of the personnel to whom the DXP switcher e-mails notification of its failure and repair status. The following figure shows a typical e-mail from the switcher.



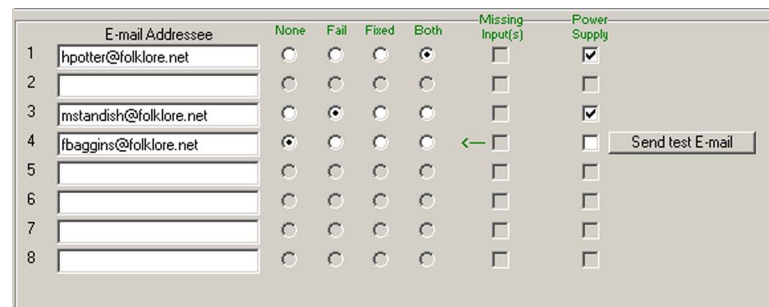
**Figure 79. Typical DXP E-mail**

The radio buttons and check boxes associated with each address field permit the administrator to specify specific e-mail requirements for each recipient.

Edit these fields and controls as follows:

1. Click in the desired **E-mail Addressee** field. The graphic cursor becomes a text cursor.
2. Edit the e-mail address as desired. Standard e-mail address conventions (such as xxxxx@xxx.com) apply.
3. Press the <Tab> key on the keyboard or click in another field to exit the e-mail addressee field.
4. Use the check boxes associated with each addressee to select the options about which the addressee will be e-mailed: missing inputs or power supply.
5. When you select either a radio button or a check box for an addressee, the floating box that contains the input numbers is displayed on the Input Settings/Options screen. Select the inputs that need monitoring by clicking on their numbers in this box. Selected input numbers are displayed in white on a blue field.

To deselect an input number, click on it again.



**Figure 80. Selecting Inputs to Monitor**

6. Use the radio buttons associated with each addressee to select whether the addressee will be e-mailed about failures, fixes, both, or will not be notified. The **None** radio button is useful for temporarily removing personnel from the e-mail list when they are unavailable, such as when traveling or on vacation.
7. If desired, click the **Send test E-mail** button to test the e-mail function.
8. Click the **Take** button for the e-mail address changes to take effect.

## Updating the Firmware

The firmware upgrade utility provides a way to replace the firmware that is coded on the DXP control board without needing to take the switcher out of service, open its enclosure, and replace the firmware chip.

Update the DXP firmware as follows:

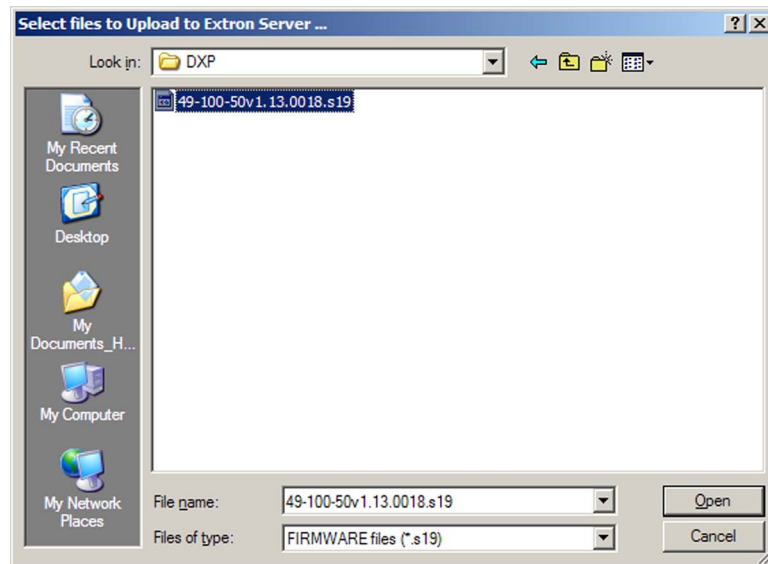
**NOTE:** The update firmware utility is for replacing the firmware that controls all switcher operation. This is **not** the page to insert your own HTML pages. See “[Uploading HTML Files](#)” on page 85 to insert custom HTML pages.

1. Go to the Extron web site, [www.extron.com](http://www.extron.com), and download the latest firmware file to your computer.
  - a. On the Extron web page, select the **Downloads** tab.
  - b. On the Download Center page, click the **Firmware** link on the left sidebar menu.
  - c. Click on the name of your DXP switcher.
  - d. On the next screen, fill in the required information, then click the **Download product name\_firmware version.exe** button.
  - e. On the File Download - Security Warning window, click **Save**.
  - f. On the Save As window, browse to the folder where you want to save the firmware file, and click **Save**. The firmware installation file is placed on your hard drive.
2. Start the Matrix Switcher Control Program and connect to the DXP switcher (see steps 1 through 4 under “[Using the Software](#)” on page 71 for the procedure).

**NOTE:** The Ethernet connection is much faster than an RS-232 or RS-422 connection. Extron recommends using the Ethernet connection rather than the serial port for firmware uploads.



- From the **Tools** menu, select **Update Firmware...**. The Select Files to Upload to Extron Server... window opens.
- Navigate to the folder where you saved the firmware file and select the file.



**Figure 81. Select Files to Upload Window with Firmware File Selected**

**NOTES:**

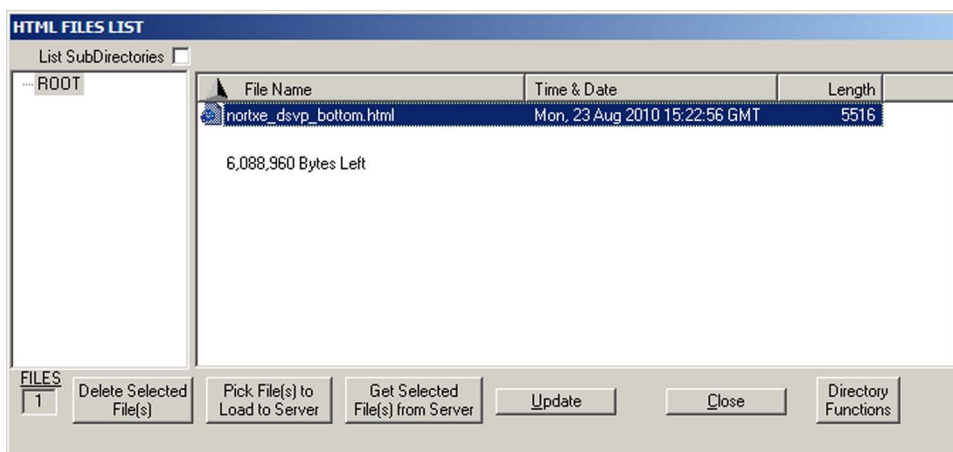
- Valid firmware files must have the file extension **.S19**. Any other file extension is not a firmware upgrade.
- The original factory-installed firmware is permanently available on the DXP switcher. If the attempted firmware upload fails for any reason, the switcher reverts to the factory-installed firmware.

- Click **Open**. A confirmation prompt window opens, reminding you that loading the selected .s19 file reprograms the device firmware.
- Click **OK** to continue with the upload. A status window appears, showing the progress of the upload. The firmware upload to the DXP switcher may take a few minutes.
- When the upload is complete, another prompt window appears, informing you that the new firmware upgrade will cause the DXP to reset, which will terminate the connection with your computer and close the control software. Click **OK**.

If you want to continue using the Matrix Switcher Control Program, you must restart it.

## Uploading HTML Files

You can create customized HTML pages for the DXP to display. The HTML Files List window (shown below) provides a way to view the contents of the DXP file system and to upload custom HTML pages to the switcher.



**Figure 82.** HTML Files List Window

**NOTES:**

- The files listed in the figure above are shown for example only and may not be present on your switcher.
- The HTML Files List window is for inserting your own HTML pages. This is **not** the window used to replace the firmware that controls all switcher operation. See “[Updating the Firmware](#)” on page 83 to update the firmware.
- The following characters are invalid or not recommended in file names:  
+ ~ , @ = ` [ ] { } < > ‘ ’ “ ” ; : | \ ? and {space}.

Upload HTML pages as follows:

1. Connect the PC to the DXP via the rear panel Remote RS232/RS422 port, the front panel Config port, or the Ethernet port.
2. Start the Matrix Switcher Control Program and connect to the DXP switcher (see steps 1 through 4 under “[Using the Software](#)” on page 71 for the procedure).
3. From the **Tools** menu, select **HTML File Manager**. The HTML Files List window opens.
4. Click the **Pick File(s) to Load to Server** button. The Select Files to Upload to Extron Server window opens.
5. Navigate to the folder where you saved the HTML files and select them.

**NOTES:**

- To select multiple files, hold the <Ctrl> key while you click on the desired files.
- If you want one of the HTML files that you created to be the default start-up page, name the file “index.html.” The DXP switcher looks for that file name when you first connect to it using an Internet browser.

6. Click the **Open** button. The file uploading process may take a few minutes.
7. Click the **Update** button to confirm the upload.
8. Click the **Close** button to exit the HTML Files List window.

## Window Buttons, Menus, and Trash Can (Right Column)

The buttons, drop-down menus, and trash can icon on the right side of the matrix window perform the following functions:



- **Power** — This button is unavailable for DXP switchers, because the DXP cannot be powered on and off via software.
- **Executive Mode** — Allows you to lock out front panel operations, except for the view-only mode functions (lock mode 2). When executive mode is enabled, the dot to the right of this button is red.
- **Room menu** — Displays a list of up to 10 rooms. From this list you can select a room to display in the window.

**NOTE:** A **room** is a subset of outputs that are logically related to each other, as determined by the operator. The DXP switcher supports up to 10 rooms, each of which can consist of 1 to 8 outputs.

- **Presets menu** — Displays a list of up to 32 global presets and up to 100 room presets (10 rooms with 10 presets per room). From this list you can select a preset to display in the window. You can either activate the selected preset by clicking **Go** or delete it by clicking **Delete**.
- **Go** — Activates the selected preset as the current configuration.
- **Save as...** — Allows the current set of ties to be saved as a preset. Enter the preset number when prompted to do so.
- **Delete** — Deletes the selected preset.
- **Take** — Allows you to save to file any changes made to the displayed configuration.
- **Cancel** — Returns to the previous screen, undoing any changes you have made.
- **Trash can** — Drag and drop from an input or output box to the trash can icon to undo all ties associated with that input or output.

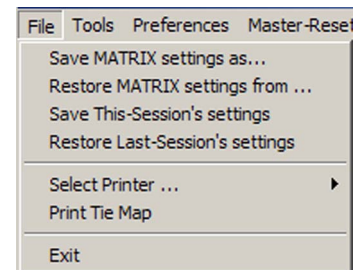
## Window Menus

The menu bar on the matrix window contains the following pull-down menus.

### File menu

The **File** menu contains the following options:

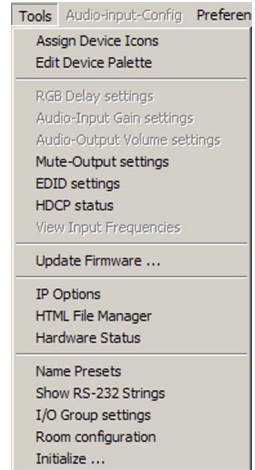
- **Save MATRIX settings as** — Saves a complete set of up to 132 presets (32 global and 100 room presets), plus the last active setting (preset #0), to a file. Saved settings include assigned icons and icon captions.
- **Restore MATRIX settings from** — Loads and activates a previously saved settings file.
- **Save This-Session's settings** — Performs the same function as **Save MATRIX settings as**, but you are not able to specify a file name to which it will be saved.
- **Restore Last-Session's settings** — Loads the icons and icon captions that were saved during the last session. If you saved the changes from the previous session when you last exited the program, the ties from that session are loaded.
- **Select Printer** — Displays a submenu of the printers for which your computer has drivers. From this list you can select the target printer to print tie maps.
- **Print Tie Map** — Prints the tie set that is displayed on the screen.
- **Exit** — Closes the Matrix Switcher Control Program.



## Tools menu

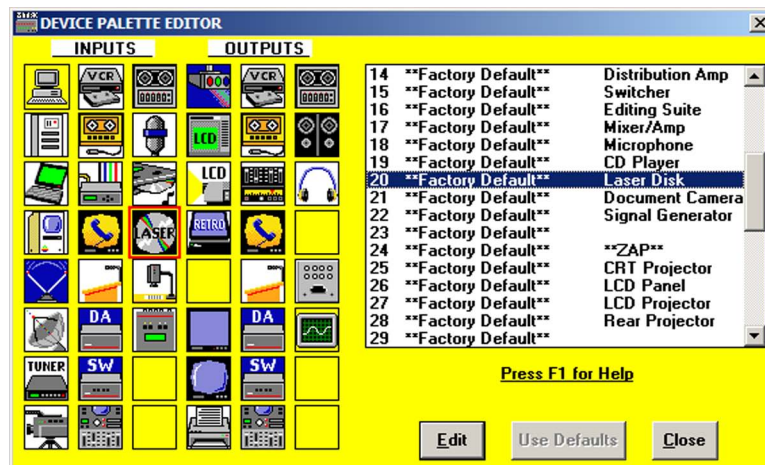
The **Tools** menu contains the following options. Grayed out options are unavailable on your switcher.)

- **Assign Device Icons** — Displays the complete set of input and output device icons. You can drag any of these icons to the input and output boxes. To remove an icon from an input or output box, drag an empty square from this list to the input or output box.



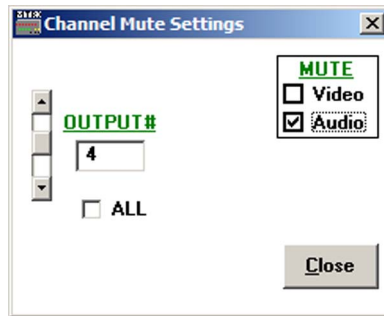
**Figure 83.** Devices Window

- **Edit Device Palette** — Allows you to add your own device icon graphics. For instructions on using this editing window, press <F1> on your computer keyboard to display a help page.



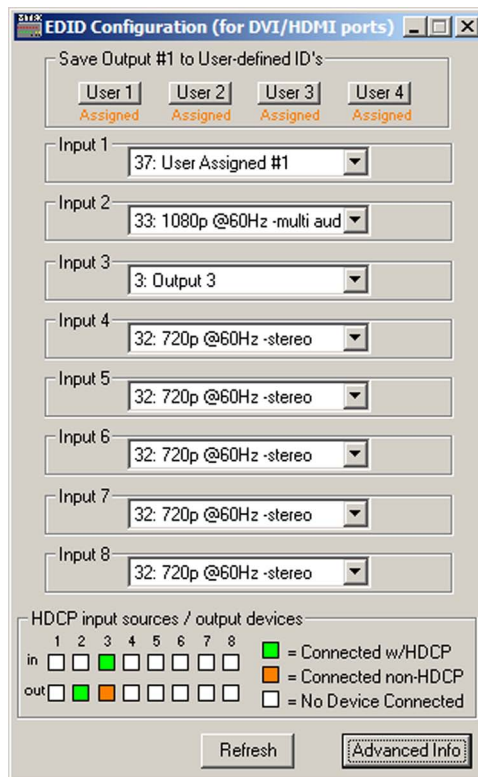
**Figure 84.** Device Palette Editor

- **Mute-Output settings** — Displays the Channel Mute Settings window. On this screen, use the slider bar to select an output to mute, then select the **Video** check box in the **Mute** field. To mute all outputs at once, select the **All** check box.



**Figure 85. Channel Mute Settings Window**

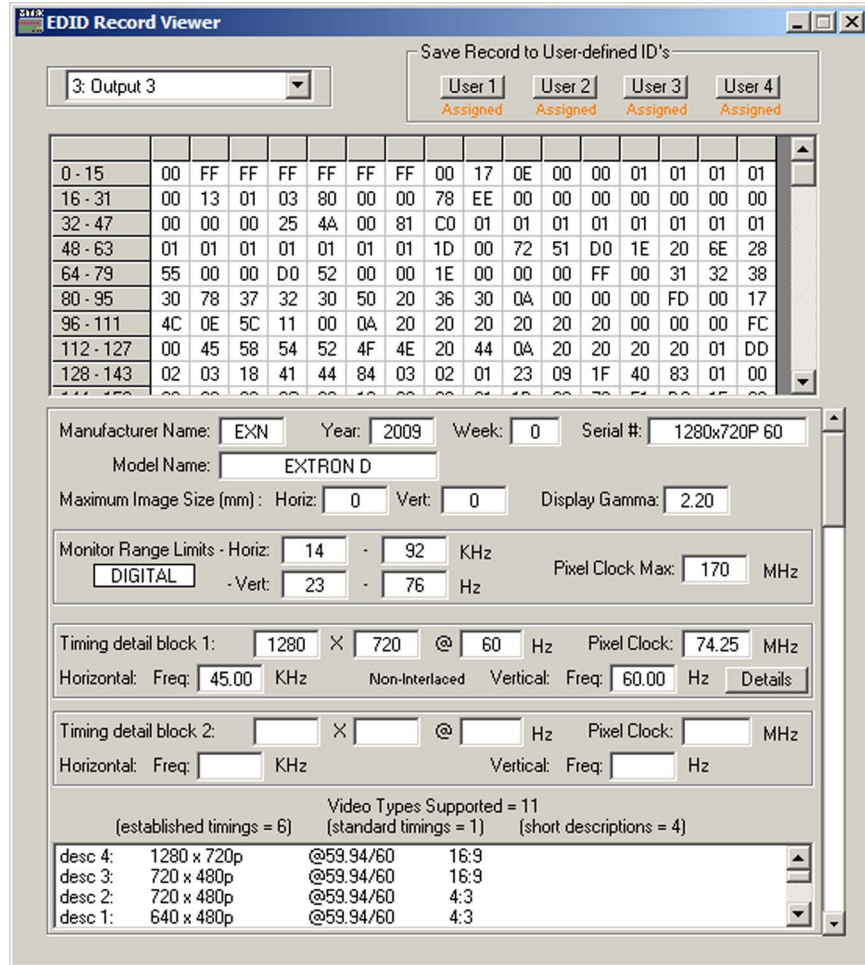
- **EDID settings** — Opens the EDID Configuration window (shown below), which enables you to set the EDID for selected inputs, and to save Output 1 to any of four user defined outputs.



**Figure 86. EDID Configuration Window**

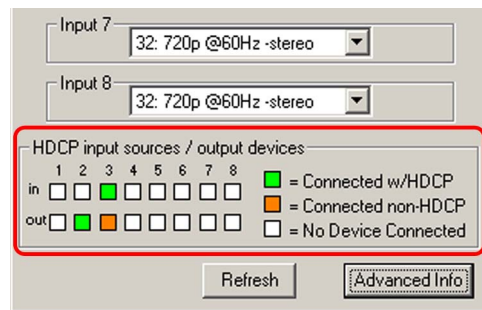
To select or save an EDID file:

1. Click **Advanced Info** to open the EDID Record Viewer window, on which you can display the EDID data for any selected output.
2. Save the EDID to a user-defined file (User-assigned EDID 37 through 40).



**Figure 87. EDID Record Viewer**

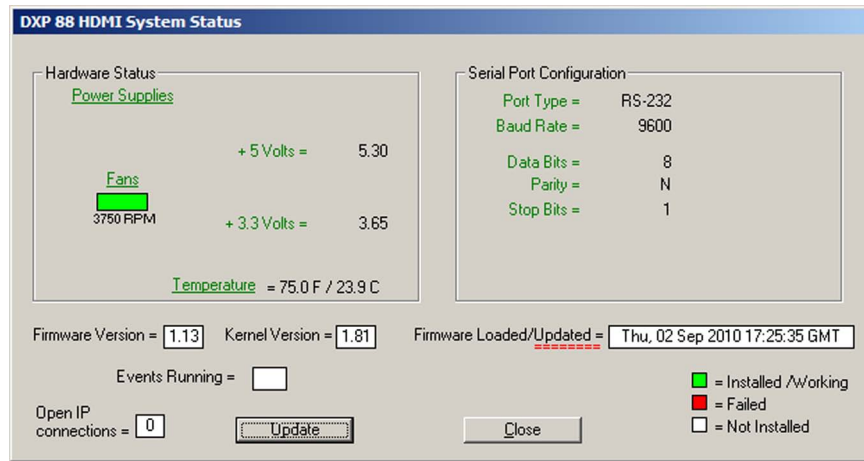
- **HDCP status** — Opens the EDID Configuration window, which contains a diagram indicating which inputs and outputs have devices connected and which of the connected devices are HDCP-compliant.



**Figure 88. HDCP Compliance Information on the EDID Configuration Window**



- **Update Firmware** — Allows you to replace the firmware that is coded on the switcher control board (see “**Updating the Firmware**” on page 83).
- **IP Options** — Allows you to set options for the IP connection (see “**IP Setup**,” on page 77).
- **HTML File Manager** — Displays a list of HTML files installed on the switcher and allows you to upload custom files to the switcher from a connected PC (see “**Uploading HTML Files**” on page 85).
- **Hardware status** — Opens the System Status window, which provides an overall view of the status of the matrix switcher, including the power supply status and the individual voltages, the internal temperature, the Remote RS232/RS422 port configuration, the number of IP connections, and the installed and updated firmware status.



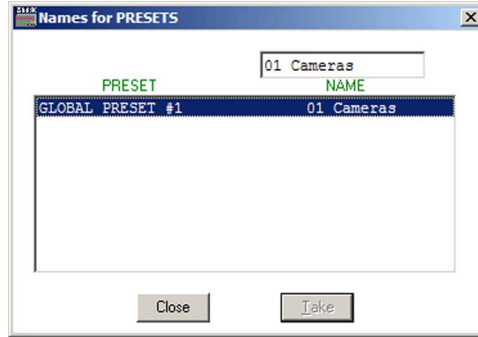
**Figure 89. System Status Window**

The text color on this screen indicates the following:

- **Green** — The component is operating properly.
- **Red** — The component has failed.
- **White** — The components are not installed.

**NOTE:** The DXP switchers are not available in custom configurations. Each model has all available monitored components, such as power supplies, installed. If you see the white “not installed” indication, the “not installed” component may have become disconnected during shipment or rough handling.

- **Name Presets** — Opens the Names for Presets window, which contains a list of all the room and global presets that you have defined.
  1. Select a preset from the list and enter a name for it in the text box at the top of the screen.
  2. Click **Take** to confirm the name.

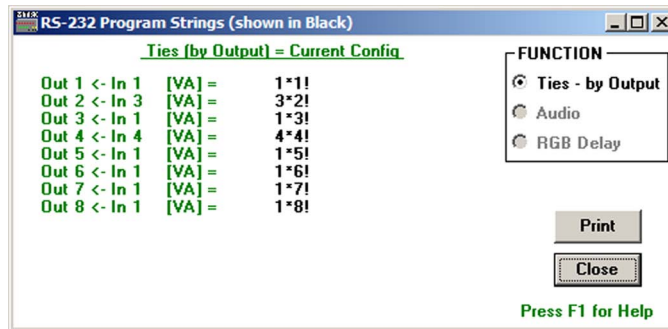


**Figure 90. Names for Presets Window**

**NOTES:** Preset names are limited to 12 upper- and lowercase alphanumeric characters, {space}, and the \_ : = and / characters.

The following characters are invalid or not recommended in preset names:  
 + ~ , @ = ` [ ] { } < > ' ' " " ; : | \ and ?.

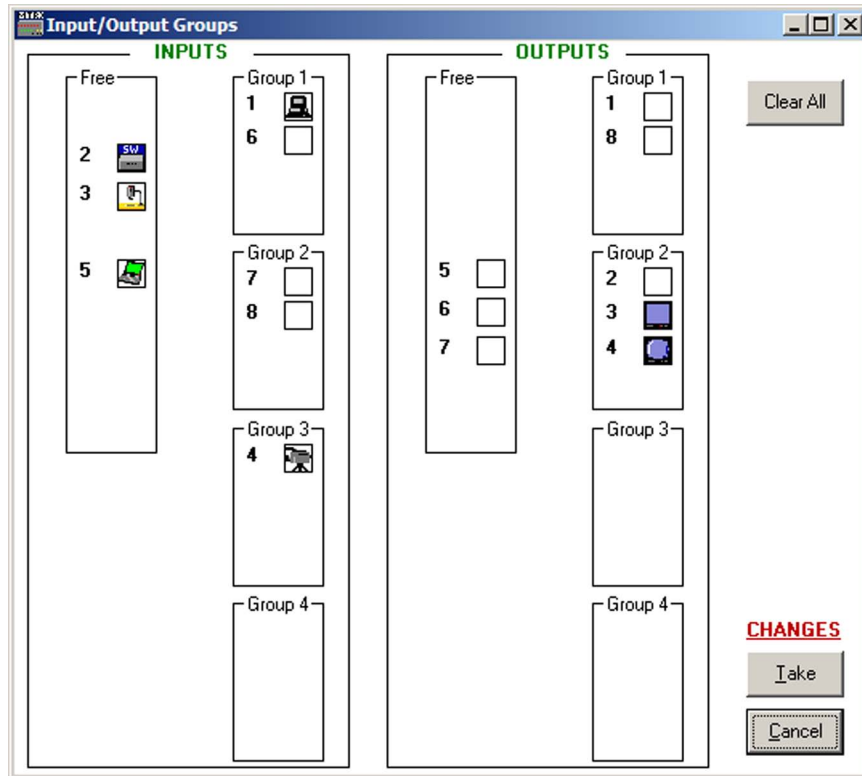
- **Show RS-232 strings** — Displays the ASCII commands that are used by the current configuration. You can refer to these for SIS programming (see the **SIS Configuration and Control** section, starting on page 47, for information on entering SIS commands).



**Figure 91. RS-232 Program Strings Window**



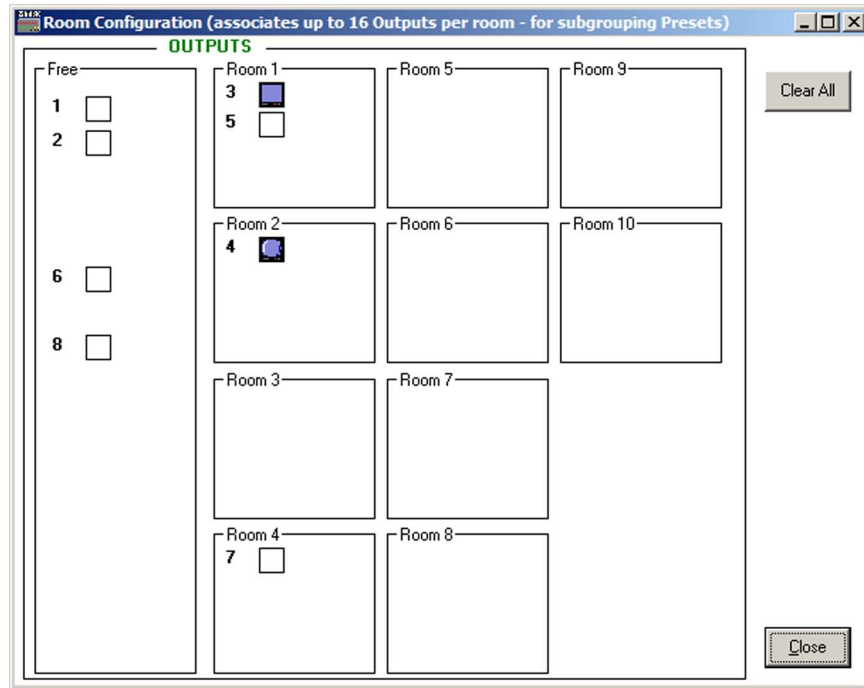
- **I/O Group settings** — Allows you to establish input-output groups.
  1. Drag two or more of the small boxes representing inputs or outputs to one of the input or output Group boxes. You can drag boxes to a Group box from the Free section or from another Group section.
  2. Repeat step 1 as desired.
  3. Click **Take** to establish the groups.



**Figure 92.** Input/Output Groups Window

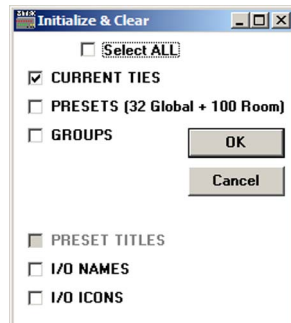
- **Room configuration** — Allows you to assign outputs to rooms or delete outputs from rooms.
  1. Drag one or more of the small boxes representing outputs to one of the Room boxes.
  2. Repeat step 1 as desired to form additional rooms.
  3. Click **Take** to establish the rooms.

**NOTE:** A **room** is a subset of outputs that are logically related to each other, as determined by the operator. The DXP switcher supports up to 10 rooms, each of which can consist of from 1 to 16 outputs.



**Figure 93. Room Configuration Window**

- **Initialize** — Displays the Initialize & Clear window, on which you can select, initialize, and clear any or all of the following: ties, presets, groups, preset titles, I/O icons, and I/O icon names.



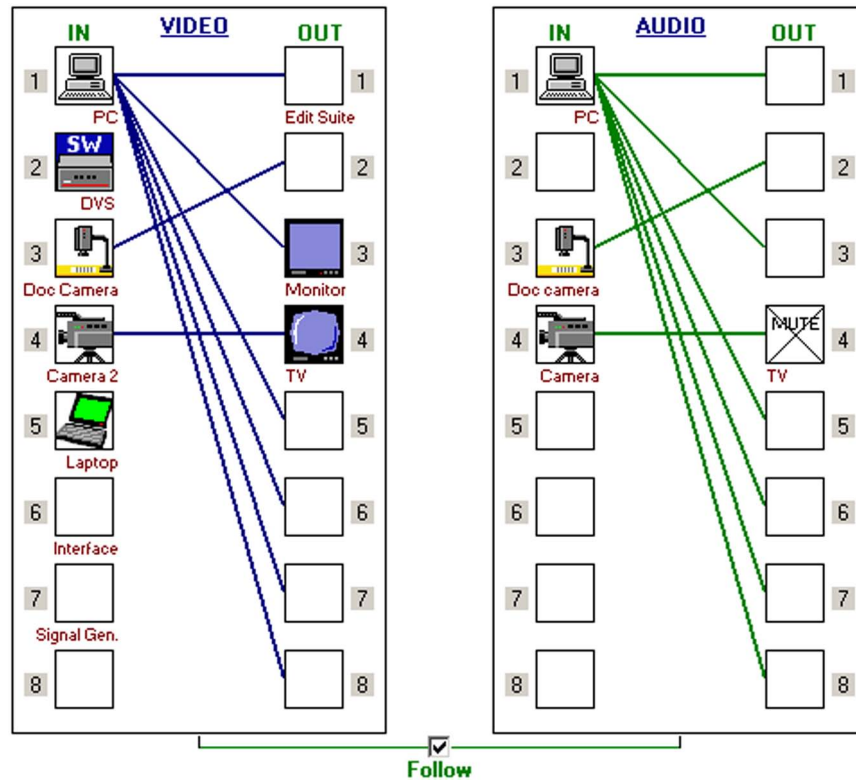
**Figure 94. Initialize & Clear Window**

## Preferences menu

The **Preferences** menu contains the following options:

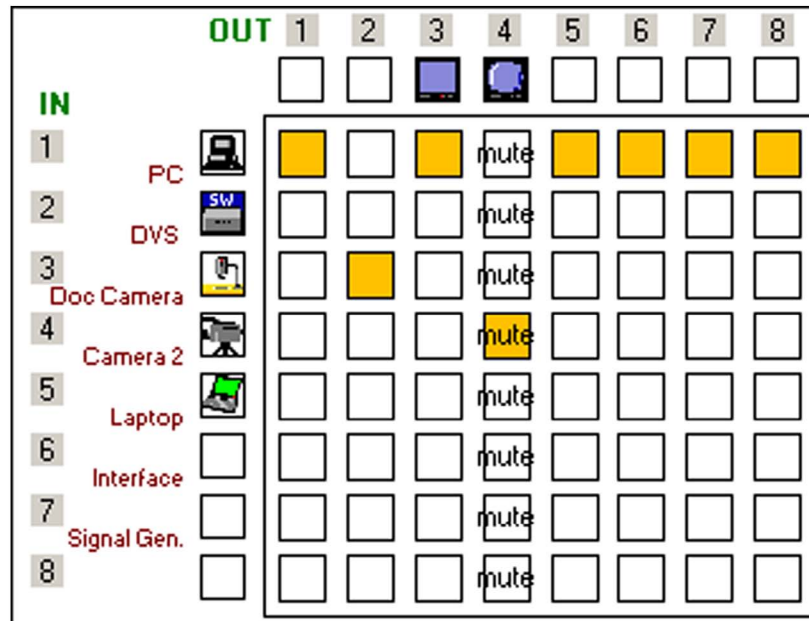
- **Immediate changes** — Specifies that the configuration changes you make take effect immediately, without the need to click a **Take** button. (When you select this option, the **Take** and **Cancel** buttons are removed from the matrix window.)
- **Hold/Verify Changes** — Delays implementation of configuration changes until the **Take** button is clicked.
- **Ties as Lines** — Displays ties as lines between input and output boxes.

Preferences	Master-Reset
<input checked="" type="checkbox"/> Immediate Changes	Hold/Verify Changes
<input checked="" type="checkbox"/> Ties as Lines	Ties as Crosspoints
Signal-detection options ▶	
<input checked="" type="checkbox"/> Limit ties to same Group	
<input checked="" type="checkbox"/> Icons in I/O Boxes	Numbers in I/O Boxes
<input checked="" type="checkbox"/> Catch FPC/other's Changes	



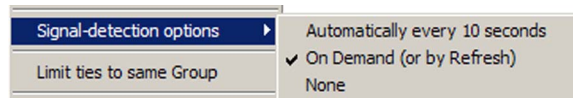
**Figure 95.** Ties Shown as Lines

- **Ties as Crosspoints** — Displays ties as a matrix of inputs and outputs. Current ties that have been made are indicated by amber boxes.
  - To create a tie, click in a crosspoint box. A + sign appears briefly in the box you clicked, indicating a tie has been formed.
  - To break a tie, click on the desired amber (tied) box. A – sign appears briefly and the amber fill is cleared from the box.



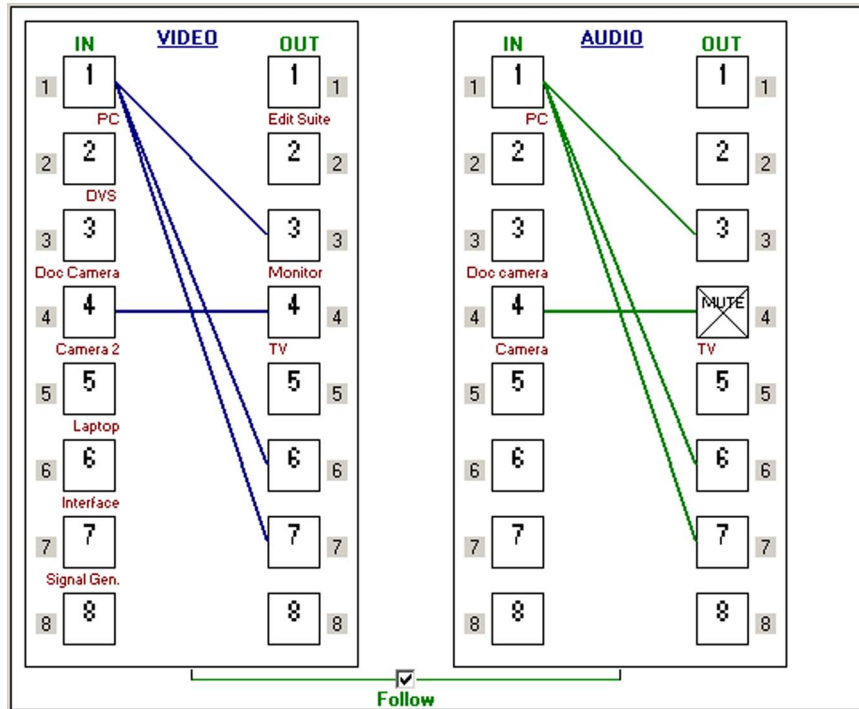
**Figure 96. Ties Shown as Crosspoints**

- **Signal-detection options** — Provides a submenu that allows you to set the input signal detection (DSVP) feature to do one of the following:



- Automatically refresh the display every 10 seconds.
- Sample the sync and update the display whenever you make a configuration change (**On Demand or by Refresh**).
- Never sample and display the sync or no sync status (**None**).
- **Limit ties to same group** — Allows you to create ties only between inputs and outputs that are in the same group (similar to front panel operation).
- **Icons in I/O boxes** — Displays icons that you place in the I/O boxes in the matrix window (see [figure 95](#) on the previous page).

- **Numbers in I/O boxes** — Displays the input and output numbers in the I/O boxes in the matrix window. You are not able to place icons in the boxes when this option is selected.



**Figure 97.** I/O Boxes Containing the Input and Output Numbers

- **Catch FPC/other’s Changes** — When checked, sets the switcher to report all configuration and setting changes to the Remote RS232/RS422 or Ethernet port connection through which this selection was made. These reports allow the Matrix Switcher Control Program to track the changes that occur in the switcher configuration and settings, whether commanded via the front panel, the Remote RS-232/RS-422 port, or the Ethernet port.

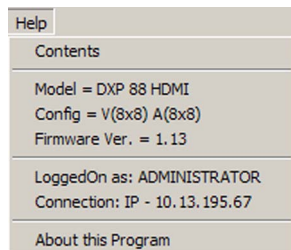
### Master-Reset button

The **Master-Reset** button on the menu bar clears all ties and presets, all output mutes, and all I/O grouping.

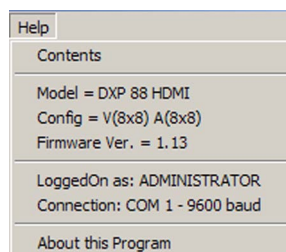
**NOTE:** This button does not reset the Internet protocol (IP) settings.

### Help menu

From this menu you can open the Matrix Switcher Control Program help file.



**IP Connection**



**Serial Connection**

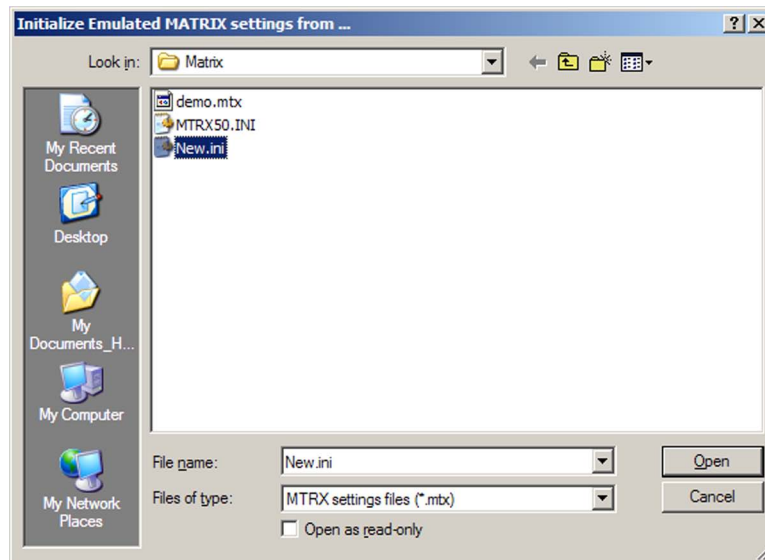
- **Contents** — Displays the Matrix Switcher + Help program, in which you can find procedures for using the software to control and configure the DXP.
- **Switcher information** — The two sections below the **Contents** option are not menu options; they display information about your switcher:
  - **Model** — DXP model name
  - **Config** — Video and audio matrix size:  $V(n \times n) A(n \times n)$
  - **Firmware Ver.** — Firmware version to second decimal place
  - **LoggedOn as:** — Administrator or User
  - **Connection** – (For RS-232 or RS-422) “Com *n*” – *baud rate*,” or (for IP) “IP – [IP address]”
- **About this Program** — Opens a window that displays information about the current version of the Matrix Switcher Control Program.

## Using Emulation Mode

Emulation mode lets you set up the software without connecting the DXP to the computer.

**NOTE:** In emulation mode, you can emulate any matrix switcher that is supported by the Matrix Switcher Control Program; you are not limited to the DXP.

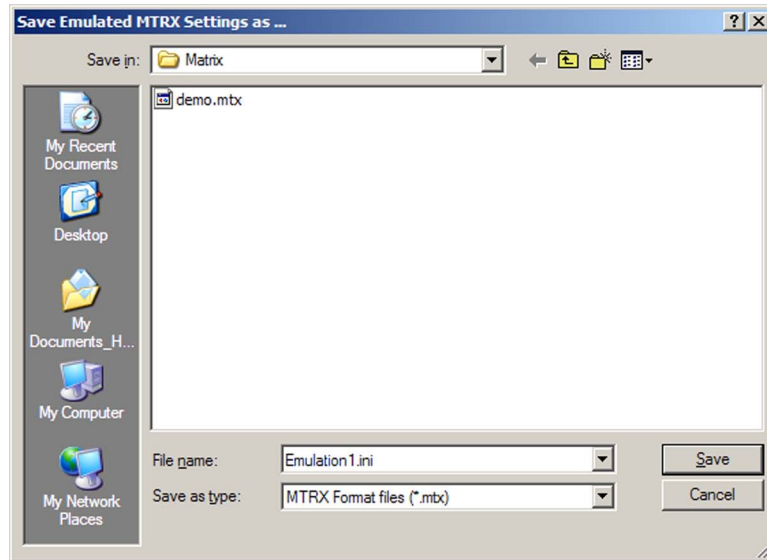
1. Double-click the **MATRIX Switchers + Control Program** icon in the Extron Electronics group or folder.
2. On the Comm Port Selection window, select **Emulate**, then click **OK**.
3. On the Initialize Emulated Matrix Settings From window, select an emulation file (.mtx extension), then click **Open**.



**Figure 98.** Selecting an Emulation File

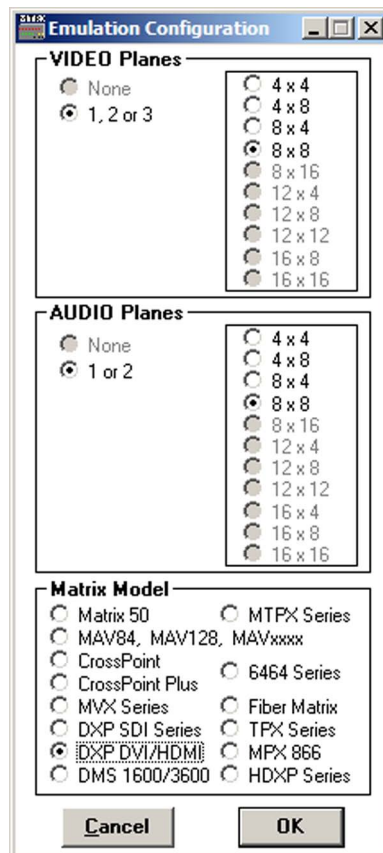
**NOTE:** Selecting the **Demo.mtx** file provides a sample of a completed matrix setup. Selecting the **New.ini** file or clicking **Cancel** provides a blank setup screen to get you started.

4. On the Save Emulated Matrix Settings window, enter a file name under which you want to save any changes to the file, and click **Save**.



**Figure 99. Saving a New Emulation File**

5. On the Emulation Configuration window, select the number of video boards, audio boards, and the matrix switcher model you are configuring, and click **OK**.



**Figure 100. Emulation Configuration Window**

6. Continue using the program as described under "**Using the Software**" on page 71.

## Using the Matrix Switcher Help File

For information about program features, you can access the Matrix Switcher Control Program help file by any of the following methods:

- From the Extron Electronics program folder or **Start** menu group, select the **MATRIX Switcher + Help** icon (shown at right).
- Within the Matrix Switcher Control Program, select **Contents** from the **Help** menu on the matrix window.
- From within the Matrix Switcher Control Program, press the <F1> key.

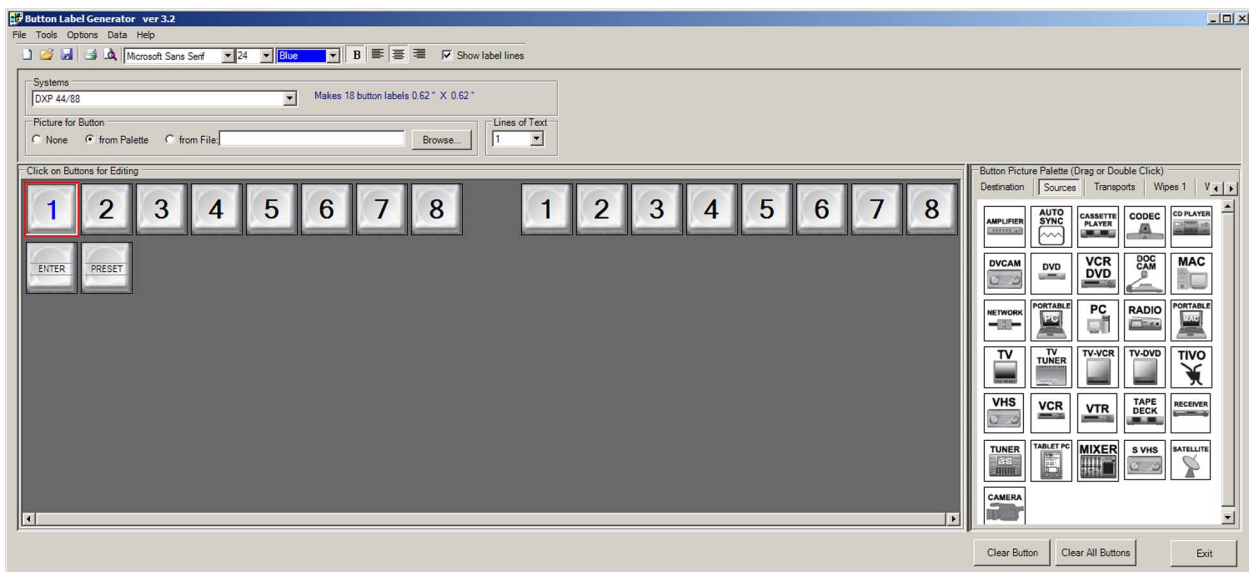


## Using the Button Label Generator

The Button Label Generator software creates labels that you can place inside the translucent covers of the input and output push buttons. You can create labels with names, alphanumeric characters, icons, and even colored bitmaps for easy and intuitive input and output selection (see “[Replacing Button Labels](#)” on page 124 for blank labels and procedures for removing and replacing the translucent button covers).

The program is contained on the same DVD as the Matrix Switcher Control Program, and is installed automatically when you install the control software. By default, the software installation creates a directory for the program at C:\Program Files\Extron\ButtonLabelGenerator. The Button Label Generator icon is placed in the Extron Electronics group or folder.

1. To run the label creation program, double-click on the **Button Label Generator** icon (shown at right) in the Extron Electronics group or folder. The Button Label Generator window opens.



**Figure 101. Button Label Generator Window**

2. From the **Systems** pull-down menu, select **DXP 44/88** for the layout that most resembles all DXP switchers (although you can select any option from this menu). You can also select **Customize Button Layouts** from the **Tools** menu to open the Customize button layout window, on which you can create your own layout.
3. Click on the button representation that you want to edit. A red box surrounds the selected button.



4. Edit the selected button by using any of the tools provided on the Button Label Generator window. Some of the edits you can make are:
  - Enter text and select the font, text size, and text color from the drop-down menus on the tool bar.
  - Select an icon from the **Button Picture Palette** and drag it to the desired button.
  - Place a bitmap image from your computer on a selected button.

To remove all the text or the image from a selected button, click **Clear Button**. To remove the text and images from all the buttons, click **Clear All Buttons**.

To access the Button Label Generator help, select **Use Help** from the **Help** menu.

5. When finished creating the labels, print out your labels by selecting **Print** from the **File** pull-down menu in the upper-left corner of the Button Label Generator window.

To save the button label set as an .xml file on your computer, select **Save As** from the **File** menu and enter a name for the label file.

# HTML Operation

This section provides procedures for accessing and using the DXP embedded web pages. The following topics are included:

- [Accessing the Web Pages](#)
- [Special Characters](#)
- [System Status Page](#)
- [System Settings Page](#)
- [Using the File Management Page](#)
- [Set and View Ties \(User Control\) Page](#)

The DXP can be controlled and operated through its Ethernet port, connected via a LAN or WAN and using a web browser such as Microsoft® Internet Explorer®. The browser displays the DXP web pages, which provide an alternative means of configuring and operating the switcher. These factory-installed web pages are always available and cannot be erased or overwritten.

**NOTE:** If your Ethernet connection to the matrix switcher is unstable, try turning off the proxy server in your web browser. To do this in Microsoft Internet Explorer, click **Tools > Internet Options > Connections > LAN Settings**, clear the **Use a proxy server...** check box, then click **OK**.

## Accessing the Web Pages

Access the HTML pages as follows:

1. Start the web browser program.
2. Click in the browser **Address** field and enter the IP address of your DXP.

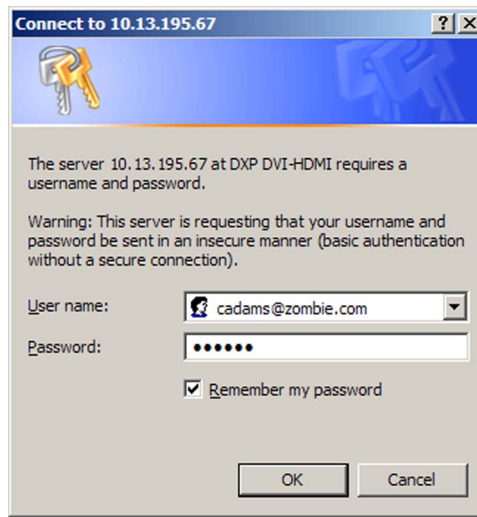
**NOTE:** If the local system administrators have not changed the value, use the factory-specified default, 192.168.254.254, in this field.

3. If you want the browser to display a page other than the default page (such as a custom page that you have uploaded), enter a slash (/) following the IP address and the name of the file to open.

**NOTES:**

- The browser **Address** field should display the IP address in the following format: *nnn.nnn.nnn.nnn/optional\_file\_name.html*.
- The following characters are invalid or not recommended in file names: + ~ , @ = `[ ] { } < > ' ' " " ; : | \ ? and {space}.

4. Press the <Enter> key. The switcher checks to see if it is password-protected.
  - If the switcher is not password-protected, the System Status web page opens.
  - If the DXP is password-protected, the network password dialog box is displayed.



**Figure 102. Example of a Network Password Dialog Box**

5. In the **Password** field, enter the appropriate administrator or user password. If desired, select the check box to have the system input your password the next time you enter your DXP IP address. Click **OK**.

**NOTE:** A **User name** entry is not required.

The DXP switcher checks several possibilities, in the following order, and then responds accordingly:

- If the address includes a specific file name, such as 10.13.156.10/*file\_name*.html, the switcher downloads that HTML page.
- If there is a file in the DXP memory that is named "index.html," the switcher downloads "index.html" as the default startup page.
- **If neither of the above conditions is true**, the switcher downloads the factory-installed default startup page, "nortxe\_index.html," also known as the System Status page.

## Special Characters

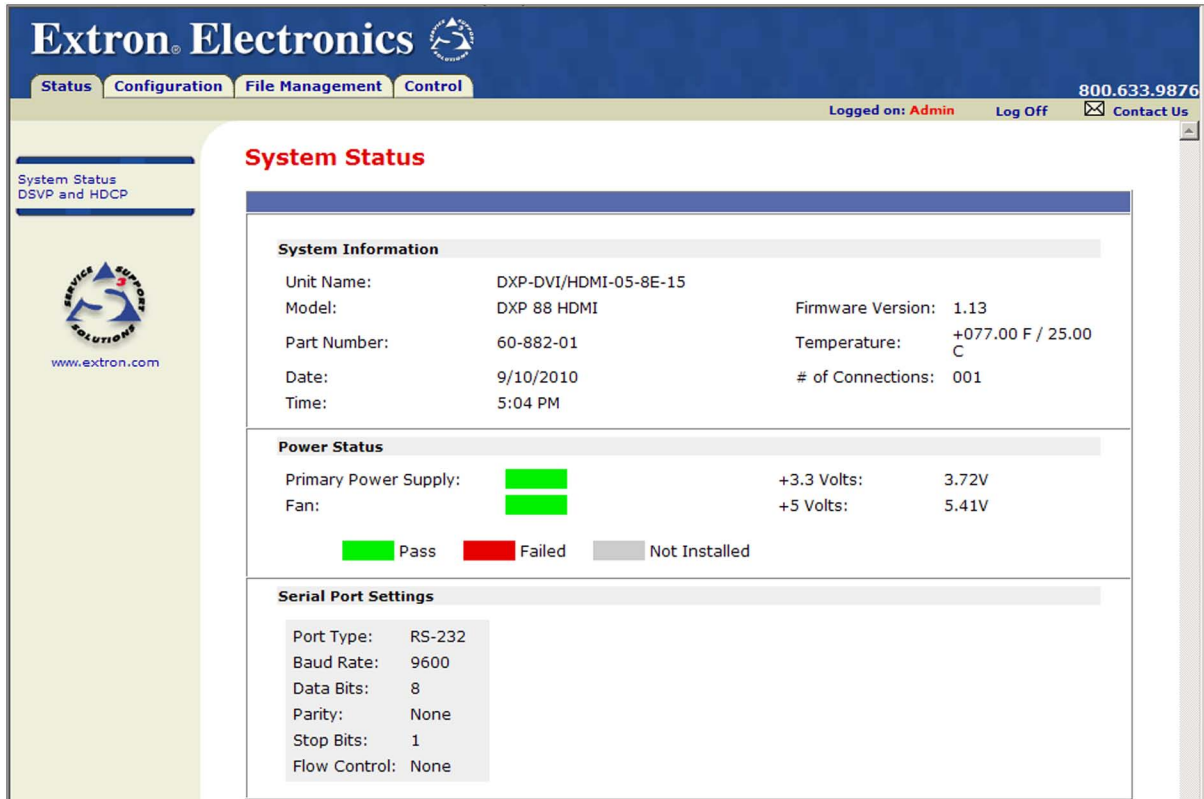
The HTML language reserves certain characters for specific functions. The DXP does not accept these characters as part of preset names, the switcher name, passwords, or locally created file names.

Use of the following characters is **not** recommended:

+ ~ , @ = ` [ ] { } < > ' ' " " ; : | \ ? and {space}.

## System Status Page

The System Status page provides an overall view of the status of the matrix switcher, including individual voltages and serial port status (if applicable). The System Status page is the default page that the switcher downloads when you connect to it. You can access the System Status page from other pages by clicking the **Status** tab.



The screenshot displays the Extron Electronics System Status page. The page has a blue header with the Extron logo and navigation tabs for Status, Configuration, File Management, and Control. The user is logged in as Admin. The main content area is titled "System Status" and is divided into three sections: System Information, Power Status, and Serial Port Settings.

**System Information**

Unit Name:	DXP-DVI/HDMI-05-8E-15		
Model:	DXP 88 HDMI	Firmware Version:	1.13
Part Number:	60-882-01	Temperature:	+077.00 F / 25.00 C
Date:	9/10/2010	# of Connections:	001
Time:	5:04 PM		

**Power Status**

Primary Power Supply:	<span style="color: green;">■</span>	+3.3 Volts:	3.72V
Fan:	<span style="color: green;">■</span>	+5 Volts:	5.41V

■ Pass   ■ Failed   ■ Not Installed

**Serial Port Settings**

Port Type:	RS-232
Baud Rate:	9600
Data Bits:	8
Parity:	None
Stop Bits:	1
Flow Control:	None

**Figure 103. System Status Page**

The System Status web page updates itself periodically to reflect the latest status of the switcher components. If a variable changes, the display shows the change in status the next time it updates.

## DSVP and HDCP Page

You can view a snapshot-in-time of the frequencies of connected inputs on the Digital Sync Validation Processing (DSVP) and High-bandwidth Digital Content (HDCP) page. Click the **DSVP and HDCP** link on the left sidebar menu on the Status page to display the DSVP and HDCP page.

**Extron Electronics**

Status Configuration File Management Control

800.633.9876

Logged on: Admin Log Off Contact Us

System Status  
DSVP and HDCP

www.extron.com

### DSVP and HDCP

This screen allows you to view your System's Input Status.

DSVP		
Input	Signal Status	Source
001	<input type="checkbox"/>	No Source
002	<input type="checkbox"/>	No Source
003	<input type="checkbox"/>	No Source
004	<input type="checkbox"/>	No Source
005	<input type="checkbox"/>	No Source
006	<input type="checkbox"/>	No Source
007	<input type="checkbox"/>	No Source
008	<input type="checkbox"/>	No Source

HDCP Input	
Input	HDCP Input Status
001	No HDCP Content
002	No HDCP Content
003	No HDCP Content
004	No HDCP Content
005	No HDCP Content
006	No HDCP Content
007	No HDCP Content
008	No HDCP Content

HDCP Output	
Output	HDCP Output Status
001	No Output Connected
002	No Output Connected
003	No Output Connected
004	No Output Connected
005	No Output Connected
006	No Output Connected
007	No Output Connected
008	No Output Connected

**Figure 104.** DSVP and HDCP Page for the DXP DVI Pro and DXP HDMI

## System Settings Page

The DXP switcher displays the System Settings page when you click the **Configuration** tab. The screen consists of fields in which you can view and edit IP administration and system settings. You can access the Email Settings and Passwords pages by clicking the appropriate link on the sidebar menu. See “[IP Addressing](#)” on page 127 for basic information about IP addresses and subnetting.

**Extron Electronics**

Status Configuration File Management Control

800.633.98

Logged on: Admin Log Off Contact Us

**System Settings**

System Settings  
Passwords  
Email Settings  
Firmware Upgrade

**IP Settings**

Unit Name: DXP-DVI/HDMI-05-8E-15

DHCP:  On  Off MAC Address: 00-05-A6-05-8E-15

IP Address: 10.13.195.67 Firmware: 1.13

Gateway IP Address: 10.13.0.100 Model: DXP 88 HDMI

Subnet Mask: 255.255.0.0 Part Number: 60-882-01

Submit Cancel

**Date/Time Settings**

Date: 9 10 2010 Local Date/Time

Time: 5 51 PM

Zone: (GMT-08:00) Pacific Time (US & Canada), Tijuana

Daylight Saving:  Off  USA  Europe  Brazil

Submit Cancel

**Figure 105. System Settings Page**

On password-protected connections, there are two levels of protection: administrator and user. Administrators have full access to all switching capabilities and editing functions. Users can create ties, create and recall presets, and view all settings with the exception of passwords.

- Ethernet connection to the switcher, either entering SIS commands (see the “[SIS Configuration and Control](#)” section, starting on page 47) or using the Matrix Switcher Control Program (see the “[Matrix Software](#)” section, starting on page 70) is password-protected.
- Connection via the RS-232/RS-422 port is not password-protected.

## IP Settings Fields

The fields in the IP Settings section provide a location for viewing and editing settings unique to the Ethernet interface. After editing any of the settings on this page, click the **Submit** button at the bottom of the section.

### Unit Name field

The **Unit Name** field contains the name used as the “from” information when the DXP e-mails notification of its failed or repaired status. You can change this name field to any valid name, up to 24 alphanumeric characters.

**NOTE:** The following characters are invalid or not recommended in the matrix name:  
+ ~ , @ = ` [ ] { } < > ‘ ’ “ ” ; : | \ and ?.

### DHCP radio buttons

The **DHCP On** radio button directs the switcher to ignore any entered IP addresses and to obtain its IP address from a Dynamic Host Configuration Protocol (DHCP) server (if the network is DHCP capable).

The **DHCP Off** radio button turns DHCP off.

Contact your local system administrator for the setting for this control.

### IP Address field

The **IP Address** field contains the IP address of the connected DXP. This value is encoded in the switcher flash memory.

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric sub-fields separated by periods. Each field can be numbered from 000 through 255. Leading zeros, up to 3 digits total per field, are optional. Values of 256 and above are invalid.

The factory-installed default address is 192.168.254.254, but if this conflicts with other equipment at your installation, you can change the IP address to any valid value.

**NOTE:** IP address changes can cause conflicts with other equipment. Only local system administrators should change IP addresses.

### Gateway IP Address field

The **Gateway IP Address** field identifies the address of the gateway (to the mail server) to be used if the switcher and the mail server are not on the same subnet.

The gateway IP address has the same validity rules as the system IP address (see “[IP Address field](#),” above).

### Subnet Mask field

The **Subnet Mask** field is used to determine whether the switcher is on the same subnet as the mail server when you are subnetting (see “[Subnetting, a Primer](#)” on page 131 for more information).

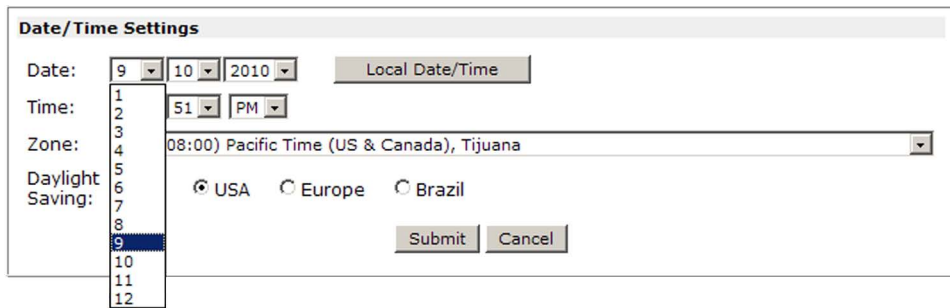
The subnet mask address has the same validity rules as the system IP and gateway IP addresses.

### MAC Address field

The Media Access Control (MAC) address is hard coded in the switcher and cannot be changed.



## Date/Time Settings Fields

The fields in the **Date/Time Settings** section provide a location for viewing and setting the time functions.



**Figure 106.** Date/Time Settings Fields

Change the date and time settings as follows:

1. Click the drop-down box for the desired variable. The variables are month, day, year, hours, minutes, am or pm, and (time) zone. A drop-list appears (the **Month** list is selected in the figure above).
2. Click and drag the slider or click the **Scroll Up**  button or **Scroll Down**  button until the desired variable is visible.
3. Click on the desired variable.

**NOTES:**

- If setting the time, set the local time. The **Zone** variable allows you to then enter the offset from Greenwich Mean Time (GMT).
- The **Zone** field identifies the standard time zone that has been selected and displays the amount of time, in hours and minutes, that the local time varies from the GMT international time reference.

4. Repeat steps **1** through **3** for other variables that need to be changed.
5. Select the appropriate **Daylight Saving** radio button. To turn off daylight savings time, select **Off**.

**NOTE:** When daylight savings time is enabled, the switcher updates its internal clock between standard time and daylight savings time in the spring and fall on the date that the time change occurs in the United States of America and parts of Europe and Brazil. When daylight savings time is turned off, the switcher does not adjust its time reference.

6. Click the **Submit** button at the bottom of the Date/Time Settings section to implement your selections.



## Passwords Page

Access the Passwords page by clicking the **Passwords** link on the sidebar menu on the System Settings page.

**Extron Electronics**

Status Configuration File Management Control

800.633.98

Logged on: Admin Log Off Contact U

System Settings  
Passwords  
Email Settings  
Firmware Upgrade

**Passwords**

To update the Administration Password, enter the desired password, repeat the entry, and press 'Submit'.  
To update the User Password, enter the desired password, repeat the entry, and press 'Submit'. To clear a password, enter a single space, repeat the entry, and press 'Submit'. Minimum password length is 4 characters. Maximum password length is 12 characters. Passwords are case sensitive and special characters are not allowed.

**Passwords**

Administrator Password:	<input type="password" value="••••"/>	Re-enter Admin Password:	<input type="password" value="••••"/>
User Password:	<input type="password"/>	Re-enter User Password:	<input type="password"/>

Submit Cancel

**Figure 107. Passwords Page**

The fields on the Passwords page are used to enter and verify administrator and user passwords. Passwords are case-sensitive and are limited to 12 upper- and lowercase alphanumeric characters.

### Entering a password

To set a password for the DXP:

1. Enter the password in the **Administrator Password** or the **User Password** field.
2. Enter the password again in the **Re-enter Password** field to the right. Characters in these fields are masked by four bullets (••••).
3. Click the **Submit** button at the bottom of the page.

If you do not want to password-protect an access level, leave the **Password** and the **Re-enter Password** fields blank.

**NOTE:** An administrator password must be created before a user password can be created.

### Clearing a password

To clear an existing password so that no password is required:

1. Delete the bullets in the **Administrator Password** or the **User Password** field and in the **Re-enter Password** field.
2. Enter a space in each field.
3. Click the **Submit** button at the bottom of the page.

## Email Settings Page

Access the Email Settings page by clicking the **Email Settings** link on the sidebar menu on the System Settings page. The Email Settings page has fields for setting up the DXP e-mail notification capabilities.

For the e-mail settings and for each row of the e-mail notification settings:

1. Click the **Edit** button at the right of the field to make the field available for editing. The button changes to **Save**.
2. After editing the settings, click the **Save** button to save them.

The screenshot shows the Extron Electronics web interface. At the top, there's a navigation bar with 'Status', 'Configuration', 'File Management', and 'Control'. The 'Email Settings' page is displayed, featuring a sidebar with 'System Settings', 'Passwords', 'Email Settings', and 'Firmware Upgrade'. The main content area is titled 'Email Settings' and contains the following fields:

- Mail IP Address: 10.25.0.1 (with a Save button)
- Domain Name: extron.com
- SMTP Authentication Required
- User Name: [empty field]
- Password: [empty field]

Below these are three rows of email notification settings, each with an 'Email Address' field, a 'Missing Input' dropdown menu, a 'Fans' checkbox, and an 'Email Options' dropdown menu.

Email Address	Missing Input	Fans	Email Options
1. hpotter@folklore.com	All <input checked="" type="checkbox"/> Input #4 Input #5 Input #6 Input #7 Input #8	<input type="checkbox"/>	[dropdown] Save
2. [empty field]	All <input type="checkbox"/> Input #1 Input #2 Input #3 Input #4 Input #5	<input type="checkbox"/>	[dropdown] Edit
3. [empty field]	All <input type="checkbox"/> Input #1 Input #2 Input #3 Input #4 Input #5	<input type="checkbox"/>	[dropdown] Edit

Figure 108. Email Settings Page

### Mail IP Address field

The **Mail IP Address** field displays the IP address and the domain name of the mail server that handles the e-mail for the facility in which the DXP switcher is installed.

The mail IP address has the same validity rules as the system IP address (see "[IP Address field](#)" on page 106).

## Domain Name field

The **Domain Name** field displays the domain name that the DXP switcher uses to log on to the e-mail server. Standard domain name conventions (for example: xxxxx@xxx.com) apply.

**NOTE:** The following characters are invalid or not recommended in a domain name: + ~ , @ = ` [ ] { } < > ‘ ’ “ ” ; : | \ ? and {space}. The @ character is acceptable only as the lead-in to the domain name (such as @folklore.net).

## SMTP Authorization Required fields

Selecting the **SMTP Authorization Required** check box sets the DXP to require SMTP authorization before accepting any e-mail. To set up this authorization requirement:

1. To enable the SMTP authorization fields, click the **Edit** button at the right of the **Mail IP Address** field. The **Edit** button changes to **Save**.
2. Select the **SMTP Authorization Required** check box, located below the **Domain Name** field. This enables the **User Name** and **Password** fields below the check box.
3. In the **User Name** and **Password** fields, enter a user name and a password that senders must enter in order for the DXP to accept their e-mail messages.

For the user name, you can use any combination of letters, numerals, spaces, and symbols **except** the comma (,) and the single and double quotation marks (‘ and “). For the password, you can use all characters except the comma. The user name and password can each be from 1 to 30 characters.

**NOTE:** You must specify **both** a user name and a password.

4. Click the **Save** button next to the **Mail IP Address** field to save your user name and password.

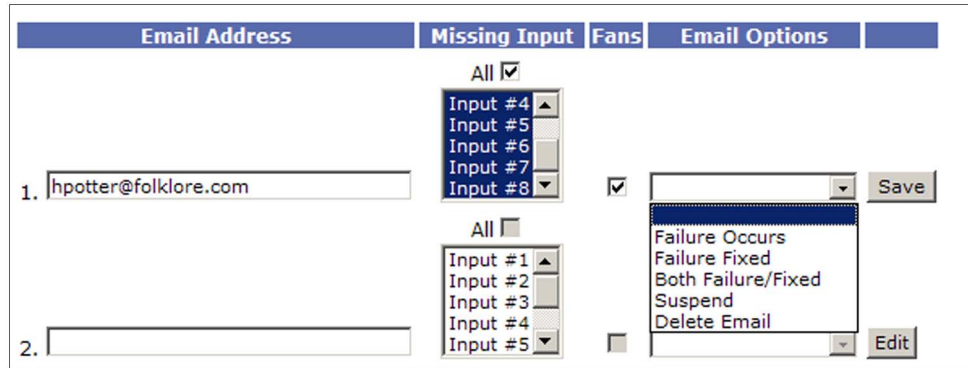
To remove SMTP authorization, click **Edit**, deselect the **SMTP Authorization Required** check box, then click **Save**.

## Email address fields

The eight **Email address** fields (see [figure 109](#) on the next page) identify the e-mail addresses of the personnel to whom the DXP switcher e-mails notification of its failure and repair status. Standard e-mail address conventions (xxxxx@xxx.com) apply.

The check boxes and drop boxes associated with each address field let you specify specific criteria under which the DXP will e-mail the recipients.

- In the **Missing Input** drop-down box to the left of the address, select the inputs to monitor for presence or absence of a signal.
- Select the check box in the **Fans** column if you want to monitor the power to the fans.
- In the associated **E-Mail Options** drop-down box, select whether the recipient is to be notified by e-mail of failures, fixes, both, not notified, or to be removed from the e-mail list.

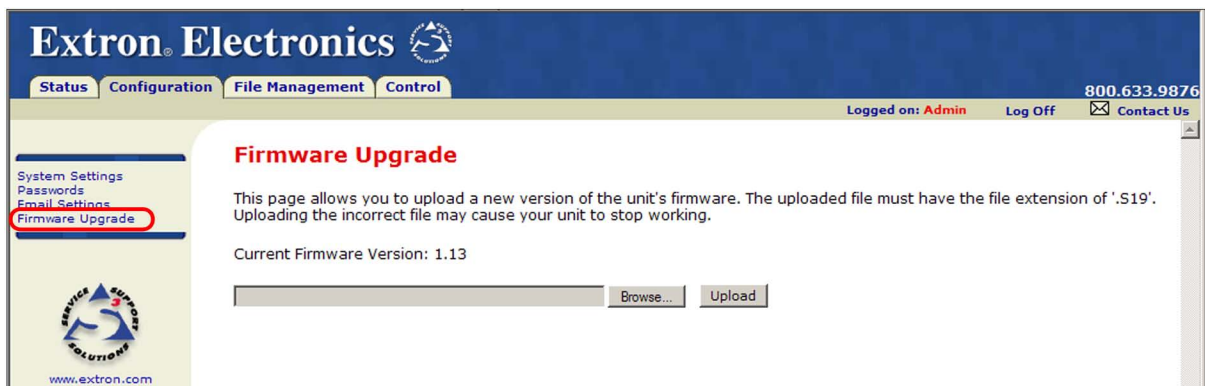


**Figure 109. Email Options Menu on the Email Settings Page**

The **Suspend** option is useful for temporarily removing personnel from the e-mail list when they are unavailable, such as traveling or vacation. Deleting an e-mail addressee and clicking the **Save** button removes the recipient from e-mail notification completely.

## Firmware Upgrade Page

The Firmware Upgrade page lets you replace the firmware that is coded on the DXP control board without needing to take the switcher out of service. Access the Firmware Upgrade page by clicking the **Firmware Upgrade** link on the System Settings page.



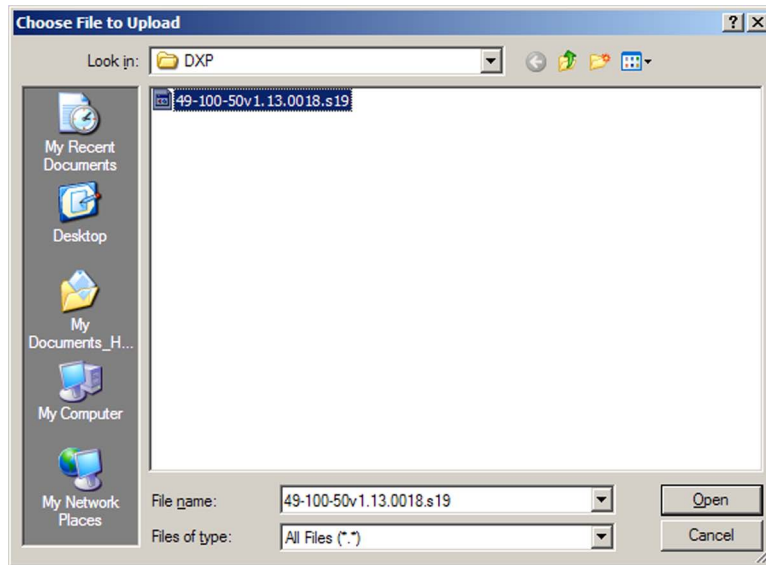
**Figure 110. Firmware Upgrade Page**

**NOTE:** The Firmware Upgrade page is **only** for replacing the firmware that controls all switcher operation. To insert your own HTML pages, see **"Using the File Management Page"** on page 113.

To update firmware using the Firmware Upgrade page:

1. Go to the Extron website, [www.extron.com](http://www.extron.com), and download the latest firmware file.
  - a. On the Extron web page, select the **Downloads** tab.
  - b. On the Download Center page, click the **Firmware** link on the left sidebar menu.
  - c. Click on the name of your DXP switcher.
  - d. On the next screen, fill in the required information, then click the **Download product name\_firmware version.exe** button.
  - e. On the File Download – Security Warning window, click **Save**.
  - f. On the Save As window, browse to the folder where you want to save the firmware file, and click **Save**. The firmware installation file is placed on your computer hard drive.

2. Access the DXP web pages.
3. Select the **Configuration** tab.
4. On the Configuration page, click the **Firmware Upgrade** link on the left side.
5. Click the **Browse** button. A Choose File to Upload window opens.
6. Navigate to the folder where you saved the firmware upgrade file and select the file.



**Figure 111. Choose File Window with a Firmware File Selected**

**CAUTION:** Valid firmware files must have the file extension **.S19**. Any other file extension is **not** a firmware upgrade. Uploading files with a different extension could cause the DXP to stop functioning.

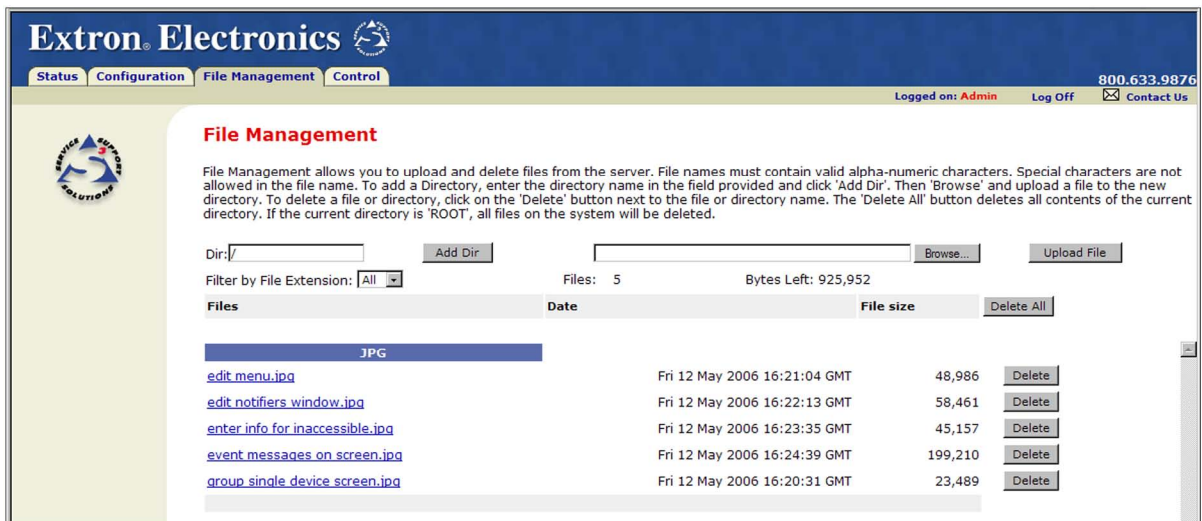
**NOTE:** The original factory-installed firmware is permanently available on the DXP switcher. If the attempted firmware upload fails for any reason, the DXP reverts to the factory-installed firmware.

7. Click **Open**.
8. On the Firmware Upgrade page, click the **Upload** button.

While the firmware is uploading, the **Upload** button changes to **Uploading...** . When the uploading process is complete, the button changes back to **Upload**. (The uploading may take a few minutes.)

## Using the File Management Page

To delete files (such as HTML pages) from the switcher or to upload your own files, click the **File Management** tab. The switcher displays the File Management page.



**Extron Electronics**

Status Configuration **File Management** Control

Logged on: Admin Log Off Contact Us 800.633.9876

### File Management

File Management allows you to upload and delete files from the server. File names must contain valid alpha-numeric characters. Special characters are not allowed in the file name. To add a Directory, enter the directory name in the field provided and click 'Add Dir'. Then 'Browse' and upload a file to the new directory. To delete a file or directory, click on the 'Delete' button next to the file or directory name. The 'Delete All' button deletes all contents of the current directory. If the current directory is 'ROOT', all files on the system will be deleted.

Dir: /  Add Dir  Browse... Upload File

Filter by File Extension: All Files: 5 Bytes Left: 925,952

Files	Date	File size	Delete All
JPG			
<a href="#">edit_menu.jpg</a>	Fri 12 May 2006 16:21:04 GMT	48,986	Delete
<a href="#">edit_notifiers_window.jpg</a>	Fri 12 May 2006 16:22:13 GMT	58,461	Delete
<a href="#">enter_info_for_inaccessible.jpg</a>	Fri 12 May 2006 16:23:35 GMT	45,157	Delete
<a href="#">event_messages_on_screen.jpg</a>	Fri 12 May 2006 16:24:39 GMT	199,210	Delete
<a href="#">group_single_device_screen.jpg</a>	Fri 12 May 2006 16:20:31 GMT	23,489	Delete

**Figure 112. File Management Page**

**NOTE:** The files listed in the figure above are shown for example only and may not be present on your switcher.

## Uploading Files

Files to be uploaded to the DXP must contain only valid alphanumeric characters and underscores.

**NOTE:** The following characters are invalid or not recommended in file names:  
+ ~ , @ = ` [ ] { } < > ' ' " " ; : | \ ? and {space}.

To upload files from the server:

1. Click the **Browse** button to the right of the file name field.
2. Browse to locate the file that you want to upload, and open it. The file name and directory path are displayed in the file name field on the File Management page.
3. Click the **Upload File** button. The selected file name appears in the **Files** column on the File Management page (files are listed separately under headings of their extensions).

**NOTE:** If you want one of the pages that you create and upload to be the default startup page, name that file "index.html."



## Adding a Directory

1. Enter the directory name in the **Dir:** field, following the slash (/).
2. Click the **Add Dir** button.
3. With the directory name displayed, perform the uploading files procedure described in the previous section to add a file to the directory. The directory name appears at the top of the Files column, preceded by a slash (/).

To add more files to the directory, click the directory name to open it, then use the [Uploading HTML files](#) procedure, described on page 85. To exit the directory, click **(root)** or **(back)**.

## Other File Management Activities

- **Open a file** — Click on the name of the file in the Files column.
- **Delete a file** — Click the **Delete** button at the right end of the line that contains the file you want to remove.
- **Delete all files** — Click the **Delete All** button.
- **Display files by file extension** — The **Filter by File Extension** menu lists the extensions of the files that have been uploaded to the DXP. This menu lets you choose to display only files with the selected extension. Select **All** to display all uploaded files.

## Set and View Ties Page (User Control)

On the Set and View Ties page, you can create and undo ties, mute and unmute outputs, and assign EDID values to inputs. To access the Set and View Ties page, select the **Control** tab, then click **User Control** in the left sidebar menu.

**Extron Electronics**

Status Configuration File Management Control

Logged on: Admin Log Off 800.633.9 Contact

User Control Presets

www.extron.com

### Set and View Ties

This screen allows you to tie Inputs to Outputs. Select an I/O type (Video, Audio, Follow), click on the Inputs and Outputs that need to be tied, and click 'Take'. To tie all Outputs to a single Input, click on the Input number itself, and then 'Take'.

**DXP 88 DVI**

Signal Type

Video Only Audio Only Video & Audio

Set & View Ties	Input Adjustments	Output Adjustments	EDID Configuration																																																																																	
<p>Outputs</p> <table border="1"><tr><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr><tr><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>6</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>7</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>8</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> <p>TAKE CANCEL</p>		1	2	3	4	5	6	7	8	1									2									3									4									5									6									7									8									<p>HDCP Authorized</p> <p>Input 1: <input checked="" type="checkbox"/></p> <p>Input 2: <input checked="" type="checkbox"/></p> <p>Input 3: <input checked="" type="checkbox"/></p> <p>Input 4: <input checked="" type="checkbox"/></p> <p>Input 5: <input checked="" type="checkbox"/></p> <p>Input 6: <input checked="" type="checkbox"/></p> <p>Input 7: <input checked="" type="checkbox"/></p> <p>Input 8: <input checked="" type="checkbox"/></p>	<p>A/V Mute</p> <p>Output 1: Muted</p> <p>Output 2: Mute</p> <p>Output 3: Mute</p> <p>Output 4: Mute</p> <p>Output 5: Mute</p> <p>Output 6: Mute</p> <p>Output 7: Mute</p> <p>Output 8: Mute</p>	<p>Save Output #1</p> <p>User 1 User 2 User 3 User 4</p> <p>Input 1: 720p @60Hz - stereo</p> <p>Input 2: 720p @60Hz - stereo</p> <p>Input 3: 720p @60Hz - stereo</p> <p>Input 4: 720p @60Hz - stereo</p> <p>Input 5: 720p @60Hz - stereo</p> <p>Input 6: 720p @60Hz - stereo</p> <p>Input 7: 720p @60Hz - stereo</p> <p>Input 8: 720p @60Hz - stereo</p>
	1	2	3	4	5	6	7	8																																																																												
1																																																																																				
2																																																																																				
3																																																																																				
4																																																																																				
5																																																																																				
6																																																																																				
7																																																																																				
8																																																																																				

Figure 113. Set and View Ties Page

The Set and View Ties screen consists of the following major sections:

- **Set & View Ties** — Consists of a matrix of input (rows) and output (columns) selection buttons.

To create a tie using this screen:

1. Move the mouse over the matrix of input and output selection buttons. Click a button to create a preliminary tie of the input and output associated with that button (if they are not already tied) or a preliminary untie (if the input and output are tied). A “P” (for preliminary) appears on the button.

**NOTES:**

- If you lose track of the input and output associated with a specific button, let the mouse rest over one of the tie buttons for a moment. A field pops up (as shown in the [figure 113 on the previous page](#)) that identifies the input and output for that button.
- To tie an input to all outputs, click that input number, located at the left of the matrix.

2. Click the **Take** button to make the configuration changes or **Cancel** button to abandon the changes.
- **Input Adjustments** — Contains an **HDCP Authorization** check box for each input. For the desired input, select this check box to turn on HDCP authorization or clear the box to turn authorization off. By default, HDCP authorization is on for all inputs.

**NOTE:** If the source requires HDCP authentication, ensure that HDCP authorization is set to On (the default).

- **Output Adjustments** — Contains an **AV Mute** button for each output.

To mute or unmute an output:

1. In the Signal Type section, select the signal that you want to mute by clicking the **Video Only**, **Audio Only**, or **Video & Audio** button. A color fill is added to the selected signal type button: **Video Only** is filled with green, **Audio Only**, red, and **Video & Audio**, amber.
2. Click the **Mute** button to the right of the desired output number. The selected button label changes to **Muted** and its background becomes the color of the signal type button selected in step 1.

To unmute an output, click its **Muted** button. The button label changes to **Mute** and the color fill is removed.

- **EDID Configuration** — Contains the following:
  - **Save Output 1 section:** If desired, you can save the EDID for the output device connected to the DXP output 1 (only) as a user-assigned EDID, by clicking one of the **User** buttons (numbered **User 1** through **User 4**). After you save the EDID of Output 1 as a user-assigned EDID, you can select it from the EDID menu for any input.
  - **EDID menus:** For each input, there is a drop-list of EDIDs (including user-assigned), from which you can select the resolution and refresh rate to assign to the input.

(If you select a **User Assigned** option for which no EDID has been specified, the default 700p @ 60 Hz is applied to the input.)



## Global Presets Page

You can save and recall global presets from the Global Presets page. To access the Global Presets page, click the **Presets** link on the sidebar menu of the Control page.

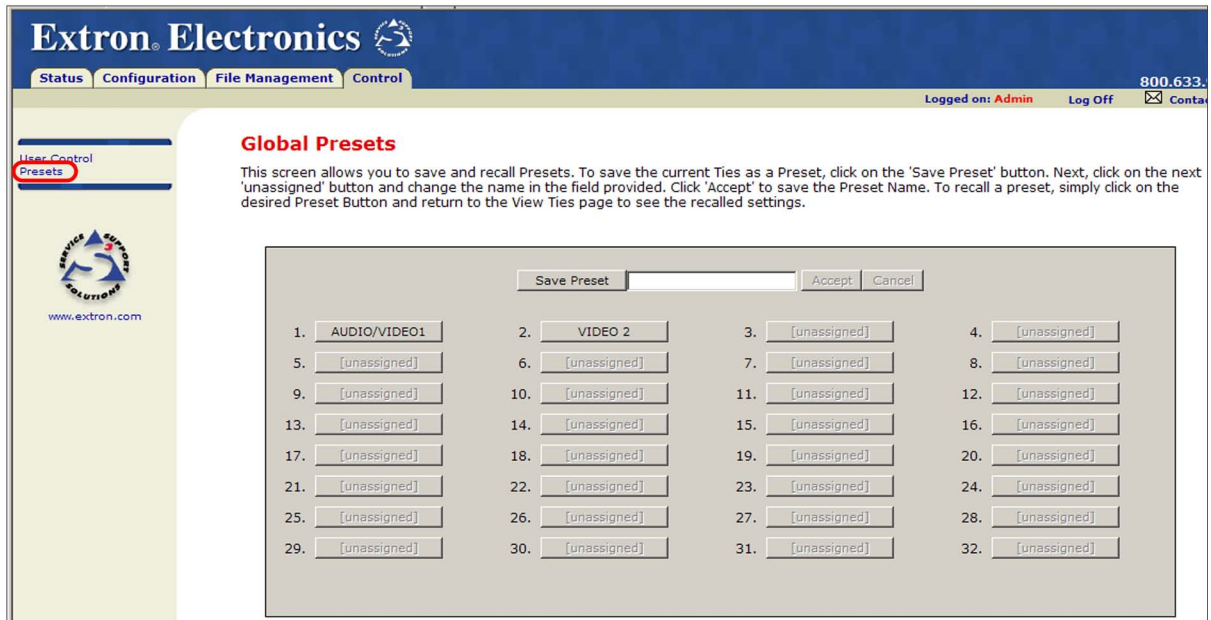


Figure 114. Global Presets Page

### Saving a preset

Save the current configuration (configuration 0) as a preset as follows:

1. Click the **Save Preset** button. It changes to **Select Preset . . .**
2. Select the desired preset by clicking one of the preset buttons.
  - To create a new preset, click one of the **[unassigned]** buttons.
  - To overwrite an existing preset, click its button.
3. Enter a name for the preset in the text field.

**NOTES:**

- Preset names are limited to 12 characters. Valid characters are **0** through **9**, **a** through **z**, and **A** through **Z**.
- The following characters are invalid or not recommended in preset names: **+ ~ , @ = ` [ ] { } < > ' ' " " ; : | \ ?** and **{space}**.

4. Click the **Accept** button.
  - If you do not rename an unassigned button, the DXP names the preset as "Preset *nn*" (*nn* is the next available number).
  - If you do not rename an existing preset when it is overwritten, the DXP retains the same name.

### Recalling a preset

To recall a global preset to be the current configuration, click the button for the desired preset on the Global Presets page.

# Reference Information

This section provides reference information on the DXP DVI Pro and DXP HDMI. The following topics are covered:

- [Specifications](#)
- [Part Numbers and Accessories](#)
- [Mounting the Switcher](#)
- [Button Labels](#)
- [IP Addressing](#)

## Specifications

### Specifications — DXP DVI Pro Series

**NOTE:** \*Appropriate DVI-D to HDMI cables or adapters are required for HDMI signal input/output.

#### Video

##### Routing

DXP 44 DVI PRO .....	4 x 4 matrix
DXP 48 DVI PRO .....	4 x 8 matrix
DXP 84 DVI PRO .....	8 x 4 matrix
DXP 88 DVI PRO .....	8 x 8 matrix

Signal type ..... Single-link DVI digital video signals are supported

Digital video ..... RGB digital video (DVI and HDMI standards) or Y, Cr, Cb digital component video (HDMI), actively buffered (supports all single-link DVI and HDMI (if using an optional adapter) standards from 640x480 @ 60 Hz to 1600x1200 @ 60 Hz computer video)

**NOTE:** The DXP DVI Pro Series switchers support TMDS data rates up to 6.75 Gbps, Deep Color up to 12-bit, 3D, HD lossless audio, and other HDMI specification features.

Digital audio ..... Supports HDMI audio (if using an HDMI to DVI adapter) transmitted through the RGB and Y, Cr, Cb lines, actively buffered.

Consumer Electronics Control (CEC) ..... Not supported

EDID and DDC ..... Supports Extended Display Identification Data (EDID) and Display Data Channel (DDC) data using DVI and HDMI standards. EDID and DDC signals are actively buffered.

HDCP ..... Compliant with High-bandwidth Digital Content Protection (HDCP) using DVI and HDMI standards

HPD ..... Supports hot plug detection (HPD) of display as a pass-through signal.

Gain ..... Unity

Resolution range .....	Up to 1080p (HDTV) or 1920x1200 (the highest resolution of the single-link DVI standard) @ 60 Hz
Maximum data rate .....	6.75 Gbps (2.25 Gbps per color)
Maximum pixel clock .....	225 MHz
Standards .....	DVI 1.0, HDMI
Switching speed .....	200 ns, max.

## Video input

Number/signal type .....	4 or 8 (depending on model) digital RGB (TMDS) single-link DVI-D (or HDMI*)
Connectors .....	4 or 8 female DVI-I (digital only)
Nominal level	
Digital video .....	1.2 Vp-p
DDC (Display Data Channel) ....	5.0 Vp-p (TTL)
Minimum/maximum level .....	0.5 V to 1.0 Vp-p with no offset
Impedance .....	100 ohms
Return loss .....	<-15 dB @ 1 MHz to 1.5 GHz
TDR rise time (10%-90%) .....	75 ps
Equalization .....	Automatic
Input cable length .....	>100' (30 m) at 1920x1200 @ 48, 50, or 60 Hz; or 1080p; 8 bit color

**NOTE:** The transmission distance varies depending on the signal resolution and on the type of cable, graphic card, and display used in the system.

## Video output

Number/signal type .....	4 or 8 (depending on model) digital RGB
Connectors .....	4 or 8 female DVI-I
Nominal level .....	1.2 Vp-p
Minimum/maximum level(s) .....	0.5 V to 1.0 Vp-p with no offset (follows input)
Impedance .....	100 ohms
Return loss .....	<-15 dB @ 1 MHz to 1.5 GHz
DC offset .....	±500 mV maximum with input at 0 offset
Rise and fall time (20-80%) .....	0.6 ns
Re-clocking .....	Automatic
Peripheral device power .....	250 mA per output

## Control/remote — switcher

Serial control port .....	(1) RS-232, 9-pin female D connector (1) RS-232, front panel 2.5 mm mini stereo jack
Baud rate and protocol .....	9600 to 115200 baud, 9600 baud (default), 8 data bits, 1 stop bit, no parity
Serial control pin configurations	
9-pin D connector .....	2 = Tx, 3 = Rx, 5 = GND
Mini stereo jack .....	Tip = Tx, ring = Rx, sleeve = GND
Ethernet control port .....	(1) RJ-45 female connector
Ethernet data rate .....	10/100Base-T, half/full duplex with autodetect
Ethernet protocol .....	ARP, ICMP (ping), IP, TCP, DHCP, HTTP, Telnet
Default settings .....	Link speed and duplex level = autodetected IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Gateway = 0.0.0.0 DHCP = off
Program control .....	Extron control/configuration program for Windows Extron Simple Instruction Set (SIS) Microsoft Internet Explorer ver. 6 or higher, Telnet

## General

Power supply.....	Internal Input: 100-240 VAC, 50-60 Hz
Power consumption .....	48 watts (fully loaded 8 x 8 unit)
Temperature/humidity .....	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling .....	Fan, air flows right to left (as viewed from front)
Thermal dissipation, full load.....	164 BTU/hr
Mounting	
Rack mount .....	Yes, 2U high
Enclosure type.....	Metal
Enclosure dimensions .....	3.5" H x 17.5" W x 12.0" D (2U high, full rack wide) (8.9 cm H x 44.4 cm W x 30.5 cm D) (Depth excludes connectors. Width excludes integrated rack ears.)
Product weight.....	10.0 lbs (4.5 kg)
Shipping weight.....	15 lbs (7 kg)
Vibration .....	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety.....	CE, c-UL, UL
Compliances.....	CE, C-tick, FCC Class A, ICES, VCCI
MTBF .....	30,000 hours
Warranty.....	3 years parts and labor

## Specifications — DXP HDMI Series

**NOTE:** \*Appropriate HDMI to DVI-D cables or adapters are required for DVI signal input/output.

## Video

Routing	
DXP 44 HDMI .....	4 x 4 matrix
DXP 48 HDMI .....	4 x 8 matrix
DXP 84 HDMI .....	8 x 4 matrix
DXP 88 HDMI .....	8 x 8 matrix
Signal type .....	TMDS digital RGB and single-link DVI digital video signals are supported
Digital video .....	RGB digital video (DVI and HDMI standards) or Y, Cr, Cb digital component video (HDMI), actively buffered (supports all single-link DVI and HDMI [if using an optional adapter] standards from 640x480 @ 60 Hz to 1600x1200 @ 60 Hz computer video and HDTV 480p, 720p, 1080i, 1080p)

**NOTE:** The DXP HDMI Series switchers support HDMI specification features including data rates up to 12-bit, 3D, and HD lossless audio formats.

Digital audio .....	Supports HDMI audio transmitted through the RGB and Y, Cr, Cb lines, actively buffered.
Consumer Electronics Control (CEC)	Not supported
EDID and DDC .....	Supports Extended Display Identification Data (EDID) and Display Data Channel (DDC) data using DVI and HDMI standards. EDID and DDC signals are actively buffered.
HDCP .....	Compliant with High-bandwidth Digital Content Protection (HDCP) using DVI and HDMI standards
HPD .....	Supports hot plug detection (HPD) of display as a pass-through signal.
Gain.....	Unity

Resolution range .....	Up to 1080p (HDTV) or 1920x1200 (the highest resolution of the single-link DVI standard) @ 60 Hz
Maximum data rate .....	6.75 Gbps (2.25 Gbps per color)
Maximum pixel clock.....	225 MHz
Standards.....	DVI 1.0, HDMI
Switching speed .....	200 ns, max.

## Video input

Number/signal type .....	4 or 8 (depending on model) digital RGB (TMDS) HDMI (or single-link DVI-D*)
Connectors .....	4 or 8 female HDMI type A (digital only)
Nominal level	
Digital video .....	1.2 Vp-p
DDC (Display Data Channel) ....	5.0 Vp-p (TTL)
Minimum/maximum level .....	0.5 V to 1.0 Vp-p with no offset
Impedance .....	100 ohms
Return loss .....	<-15 dB @ 1 MHz to 1.5 GHz
TDR rise time (10%-90%) .....	75 ps
Equalization .....	Automatic
Input cable length .....	>100' (30 m) at 1920x1200 @ 48, 50, or 60 Hz; or 1080p; 8 bit color

**NOTE:** The transmission distance varies depending on the signal resolution and on the type of cable, graphic card, and display used in the system.

## Video output

Number/signal type .....	4 or 8 (depending on model) digital RGB
Connectors .....	4 or 8 female HDMI type A
Nominal level .....	1.2 Vp-p
Minimum/maximum level(s).....	0.5 V to 1.0 Vp-p with no offset (follows input)
Impedance .....	100 ohms
Return loss .....	<-15 dB @ 1 MHz to 1.5 GHz
DC offset .....	±500 mV maximum with input at 0 offset
Rise and fall time (20-80%).....	0.6 ns
Re-clocking .....	Automatic
Peripheral device power .....	250 mA per output

## Control/remote — switcher

Serial control port.....	(1) RS-232, 9-pin female D connector (1) RS-232, front panel 2.5 mm mini stereo jack
Baud rate and protocol.....	9600 to 115200 baud, 9600 baud (default), 8 data bits, 1 stop bit, no parity
Serial control pin configurations	
9-pin D connector.....	2 = Tx, 3 = Rx, 5 = GND
Mini stereo jack .....	Tip = Tx, ring = Rx, sleeve = GND
Ethernet control port.....	(1) RJ-45 female connector
Ethernet data rate .....	10/100Base-T, half/full duplex with autodetect
Ethernet protocol .....	ARP, ICMP (ping), IP, TCP, DHCP, HTTP, Telnet
Default settings.....	Link speed and duplex level = autodetected IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Gateway = 0.0.0.0 DHCP = off
Program control .....	Extron control/configuration program for Windows Extron Simple Instruction Set (SIS) Microsoft Internet Explorer ver. 6 or higher, Telnet

## General

Power supply.....	Internal Input: 100-240 VAC, 50-60 Hz
Power consumption .....	48 watts (fully loaded 8 x 8 unit)
Temperature/humidity .....	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling .....	Fan, air flows right to left (as viewed from front)
Thermal dissipation, full load.....	130 BTU/hr
Mounting	
Rack mount .....	Yes, 2U high
Enclosure type.....	Metal
Enclosure dimensions .....	3.5" H x 17.5" W x 12.0" D (2U high, full rack wide) (8.9 cm H x 44.4 cm W x 30.5 cm D) (Depth excludes connectors. Width excludes integrated rack ears.)
Product weight.....	10.0 lbs (4.5 kg)
Shipping weight.....	15 lbs (7 kg)
Vibration .....	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety.....	CE, c-UL, UL
Compliances.....	CE, C-tick, FCC Class A, ICES, VCCI
MTBF .....	30,000 hours
Warranty.....	3 years parts and labor

- NOTES:**
- All nominal levels are at  $\pm 10\%$ .
  - Specifications are subject to change without notice.

## Part Numbers and Accessories

### Included Parts

The following parts are provided with your DXP DVI Pro or DXP HDMI.

Included Part	Replacement Part Number
DXP 44 DVI Pro	60-875-01
DXP 48 DVI Pro	60-1009-01
DXP 84 DVI Pro	60-876-01
DXP 88 DVI Pro	60-877-01
DXP 44 HDMI	60-880-01
DXP 48 HDMI	60-1010-01
DXP 84 HDMI	60-881-01
DXP 88 HDMI	60-882-01
Rubber feet, self-adhesive (4) (not attached)	
US style IEC power cord	
LockIt™ HDMI Cable Lacing Bracket (one for each HDMI connector)	101-020-01 (package of 50)
<i>LockIt HDMI Lacing Bracket Installation Guide</i> card	
<i>DXP DVI Pro and DXP HDMI Series Matrix Switchers Setup Guide</i>	
Rack mount kit	

### Optional Accessories

The following optional accessories can be purchased for use with the DXP DVI Pro or DXP HDMI.

Accessory	Part Number
MKP 2000 Matrix Switcher X-Y Remote Control Panel:	
Black	60-682-02
White	60-682-03
RAL9010 White	60-682-05
MKP 3000 Matrix Switcher X-Y Remote Control Panel:	
Black	60-708-02
White	60-708-03
RAL9010 White	60-708-05
9-pin D female to 2.5 mm TRS configuration cable	70-335-01

## Cables and Adapters

The following optional cables and adapters are available for use with the DXP DVI Pro or DXP HDMI Pro:

Cable	Part Number
DVID SL/3 DVI-D male-to-male 3' (90 cm)	26-585-01
DVID SL/6 DVI-D male-to-male 6' (1.8 m)	26-585-02
DVID SL/15 DVI-D male-to-male 15' (4.5 m)	26-585-03
HDMI M-M/3 HDMI male-to-male 3' (90 cm)	26-613-01
HDMI M-M/6 HDMI male-to-male 6' (1.8 m)	26-613-02
HDMI M-M/12 HDMI male-to-male 12' (3.6 m)	26-613-03
HDMI M-M/25 HDMI male-to-male 25' (7.6 m)	26-613-04
HDMI M-M/32 HDMI male-to-male 32' (10.6 m)	26-613-05
HDMI M-M/50 HDMI male-to-male 50' (15.2 m)	26-613-06
HDMIM-DVIDF HDMI male-to-DVI-D female adapter	26-617-01
HDMIF-DVIDM HDMI female-to-DVI-D male adapter	26-616-01
HDMIF-DVIDF HDMI female-to-DVI-D female adapter	26-618-01

## Mounting the Switcher

### UL Guidelines for Rack Mounting

The following Underwriters Laboratories (UL) guidelines pertain to the installation of the DXP into a rack:

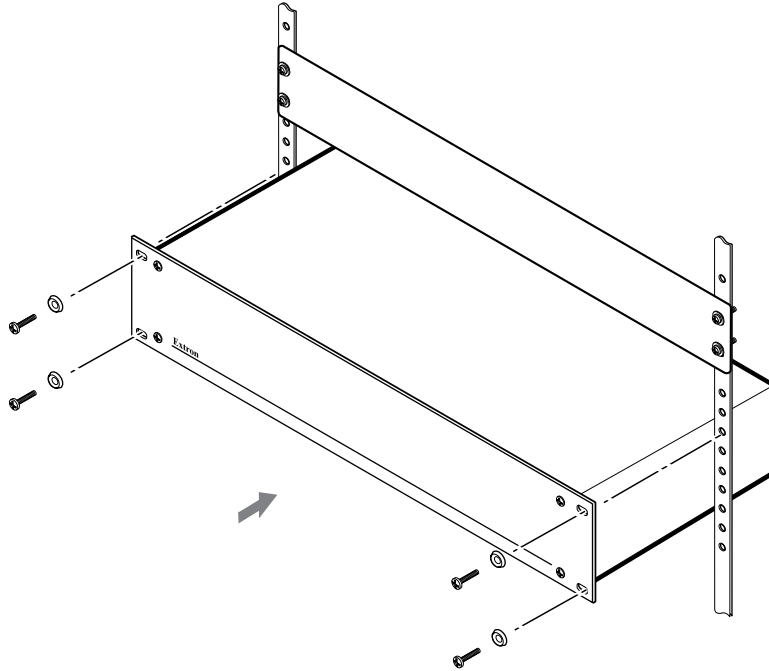
- **Elevated operating ambient temperature** — If the equipment is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consider installing the equipment in an environment compatible with the maximum ambient temperature (T<sub>ma</sub>) specified by the manufacturer.
- **Reduced air flow** — Install the equipment in the rack so that the amount of air flow required for safe operation of the equipment is not compromised.
- **Mechanical loading** — Mount the equipment in the rack so that uneven mechanical loading does not create a hazardous condition.
- **Circuit overloading** — When connecting the equipment to the supply circuit, consider the connection of the equipment to the supply circuit and the effect that circuit overloading might have on overcurrent protection and supply wiring. Consider equipment nameplate ratings when addressing this concern.
- **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (such as the use of power strips).



## Rack Mounting Procedure

The DXP matrix switchers are housed in rack-mountable metal enclosures with mounting flanges for standard 19-inch racks. If desired, mount the DXP switcher to a rack as follows:

1. Insert the switcher into the rack, aligning the holes in the mounting flanges with those in the rack.
2. Secure the switcher to the rack using the supplied bolts.



**Figure 115.** Rack Mounting the DXP to a 19-inch Rack

## Button Labels

The next page provides strips of blank button labels. If desired, photocopy them or cut them out of the guide, write button information in each button area as desired, and put them in the windows for the switcher input or output buttons. You can also create labels using the Button Label Generator software (see the “[Matrix Software](#)” section, starting on page 70).

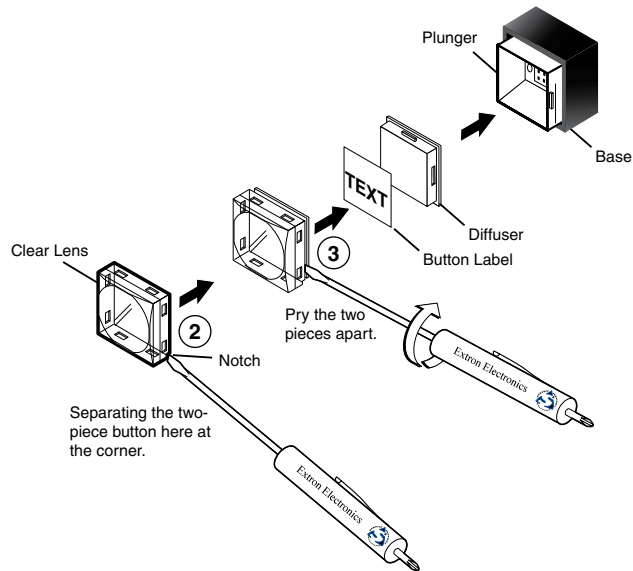
## Replacing Button Labels

The button caps are pre-labeled by default, for your convenience. However, you can replace them with the included additional printed button labels or with labels that you print yourself.

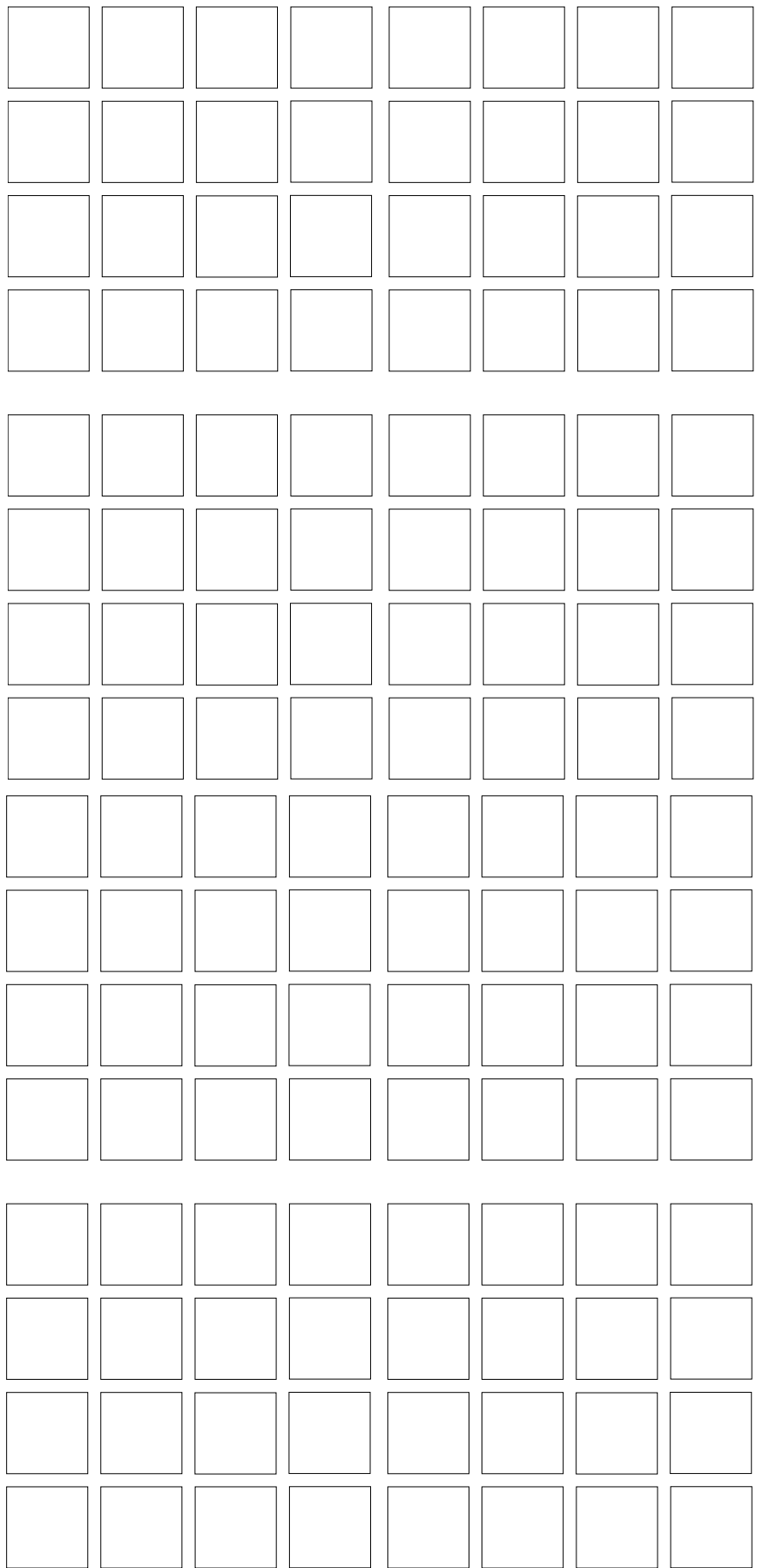
The button assembly consists of a clear lens cap, the button label, and a white diffuser (see [figure 116](#) on the next page). Remove the button assembly from the DXP as follows:

1. Make new labels using either the blanks at the end of this section or the Button Label Generator software. Cut them out.
2. Remove the button assembly by inserting a small, flat-bladed screwdriver, such as an Extron Tweaker, between the button base and the diffuser to gently pry the button assembly off the button plunger, as shown in [figure 115](#), above.

3. Locate the small corner notch on the clear lens cap, and slide the screwdriver between the lens cap and the diffuser (see ② in the illustration below).
4. Using a rotating motion of the screwdriver, carefully pry the two pieces apart (see ③ in the illustration below).
5. Lift out the transparent square label that you want to replace, being careful not to damage the circuits beneath it. You may need to use the small screwdriver to gently pry the label out.
6. Insert one of the new label you created in step 1 into the clear button cap, align the white backing plate with the cap, and firmly snap it into place.
7. Gently, but firmly, press the reassembled button into place on the DXP front panel.
8. Repeat steps 1 through 7 as needed to relabel other buttons.



**Figure 116.** Replacing a Button Label



# IP Addressing

## What is an IP Address?

An IP address is a 32-bit binary number that is used to identify each device on an Ethernet network. This number is usually represented by four decimal numbers (called “octets”), each in the range of 0 through 255 and separated by dots; for example, 198.123.34.240. This is called “dotted decimal notation.”

An IP address is divided into two parts:

- Network identifier
- Host identifier

Each address on a given network must have the same network identifier value but have a unique host identifier. As a result, there are different classes of addresses that define the range of valid addresses and the parts of the address that are used for the network and host identifiers.

The most common IP address classes are:

Class Name	Valid Address Range	Identifier Arrangement
Class A	0.0.0.1 to 127.255.255.254	<i>NNN . HHH . HHH . HHH</i>
Class B	128.0.0.1 to 191.255.255.254	<i>NNN . NNN . HHH . HHH</i>
Class C	192.0.0.1 to 223.255.255.254	<i>NNN . NNN . NNN . HHH</i>

*NNN* refers to the network identifier and *HHH* refers to the host identifier.

## Choosing IP Addresses

If the computer and the DXP are directly connected or connected via their own independent network, follow the guidelines below for choosing the IP addresses.

However, if you intend to connect your computer and switcher to an existing network, you need to advise the network administrator and ask the administrator to allocate suitable IP addresses.

On an independent network, it is generally recommended that you use the Class C format (from 192.0.0.1 to 223.255.255.254).

There are two rules for choosing IP addresses:

- Network identifier must be the same for each IP address
- Host identifier must be unique for each address.

Applying these rules to Class C addresses, the first three decimal values of your IP address must all be the same while the last value is used to uniquely identify each device.

The following is an example of a **valid** Class C addressing scheme:

Device	IP Address
Matrix Switcher Control Software computer	208.132.180.41
DXP DVI Pro switcher	208.132.180.42

**NOTE:** The host identifiers (41, 42, and 43 in the above example) do not need to be sequential or in any particular order. However, it is recommended that you group the numbers for simplicity.

The following is an example of an **invalid** Class C addressing scheme:

Device	IP Address
Matrix Switcher Control Software computer	208.132.180.41
DXP DVI Pro switcher	192.157.180.42

**NOTE:** The above addresses are invalid because the network identifier for each address is not the same even though each IP address is unique.

You can perform a test from your computer to check that a device at a particular address is responding correctly or to determine its address (see [“Pinging for the IP Address,”](#) below).

## Subnet Mask

The subnet mask is another 32-bit binary number that is used to “mask” certain bits of the IP address. This provides a method of extending the number of network options for a given IP address. It works by allowing part of the host identifier to be used as a subnet identifier.

It is important that you set the correct value for the subnet mask. The basic values depend on the class of IP address being used.

Class Name	Subnet Mask
Class A	255.0.0.0
Class B	255.255.0.0
Class C	255.255.255.0

(See [“Subnetting, a Primer”](#) on page 131 for more information.)

## Pinging for the IP Address

To access the DXP switcher via the Ethernet port, you need the switcher IP address. If the address has been changed to an address comprised of words and characters, the actual numeric IP address can be determined using the Ping utility. If the address has not been changed, the factory-specified default is 192.168.254.254.

Ping can also be used to test the Ethernet link to the DXP switcher.

### Ping to determine Extron IP address

The Microsoft Ping utility is available at the command prompt. Ping tests the Ethernet interface between the computer and the DXP switcher. Ping can also be used to determine the actual numeric IP address from an alias and to determine the web address.

Ping the switcher as follows:

1. From the Windows **Start** menu, select **Run...** . The Run window opens.
2. In the **Open** text field, enter **command**.
3. Click **OK**. A command window opens.

4. At the command prompt, enter `ping IP address`. The computer returns a display similar to figure 117.

The line `Pinging ...` reports the actual numeric IP address, regardless of whether you entered the actual numeric IP address or an alias name.

```
C:\>ping 192.168.254.254

Pinging 192.168.254.254 with 32 bytes of data:

Reply from 192.168.254.254: bytes=32 time<10ms TTL=128
Reply from 192.168.254.254: bytes=32 time<10ms TTL=128
Reply from 192.168.254.254: bytes=32 time<10ms TTL=128
Reply from 192.168.254.254: bytes=32 time<10ms TTL=128

Ping statistics for 192.168.254.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

**Figure 117. Ping Response**

### Ping to determine web IP address

The Ping utility has a modifier, `-a`, that directs the command to return the web address rather than the numeric IP address.

At the prompt, enter `ping -a IP address`. The display that the computer returns is similar to the Ping response shown in the figure above, except that when you specify the `-a` modifier, the line `Pinging mail...` reports the web IP address instead of the numeric IP address, regardless of whether you entered the actual numeric IP address or an alias name.

## Connecting as a Telnet Client

The Microsoft Telnet utility is available from the command prompt. Telnet allows you to input SIS commands to the DXP switcher from the PC via the Ethernet link and the LAN.

### Starting Telnet

Access the command prompt and start Telnet as follows:

1. From the **Start** menu, select **Run...** The Run window opens.
2. In the **Open** text field, enter `command`.
3. Click **OK**. A command window opens.
4. At the prompt, enter `telnet`. The computer returns a display similar to the figure below.

```
Microsoft (R) windows 2000 (TM) Version 5.0 (Build 2195)
Welcome to Microsoft Telnet Client
Telnet Client Build 5.00.99203.1

Escape Character is 'CTRL+]'

Microsoft Telnet>
```

**Figure 118. Telnet Screen**

## Operating using Telnet

It is not the intention of this guide to detail all of the operations and functionality of Telnet; however, some basic level of understanding is necessary for operating the DXP switcher via Telnet.

### Connecting to the DXP (Open command)

You connect to the DXP Plus switcher using the `Open` command. After your computer is connected to the switcher, you can enter the SIS commands the same as you would if you were using the RS-232 link.

Connect to the DXP as follows:

1. At the Telnet prompt, enter `open IP address`.
  - **If the switcher is not password-protected**, no further prompts are displayed until you disconnect from the DXP switcher.
  - **If the switcher is password-protected**, Telnet displays the password prompt.
2. If necessary, enter the password at the password prompt.

Connection to the switcher via the Ethernet can be password protected. There are two levels of password protection: administrator and user.

- A person logged on as an administrator has full access to all DXP switching capabilities and editing functions.
- Users can select test patterns, mute or unmute the output, select a blue screen, and view all settings with the exception of passwords. By default, the switcher is delivered with both passwords set to "carriage return."

When you are logged in, the switcher returns either `Login Administrator` or `Login User`. No further prompts are displayed until you disconnect from the DXP switcher.

### Escape character and Esc key

Many SIS commands include the keyboard <Esc> key. Consequently, some confusion may exist between the `Escape` character and the <Esc> key.

When Telnet is first started, the utility advises that the `Escape` character is "`Ctrl+J`." This means that the Telnet `Escape` character is a key combination: the <Ctrl> key and the <J> key pressed simultaneously. Pressing these keys displays the Telnet prompt while leaving the connection to the DXP switcher intact.

### Local echo

Once your computer is connected to the DXP switcher, by default Telnet does not display your keystrokes on the screen. SIS commands are entered blindly, and only the SIS responses are displayed on the screen. To command Telnet to show all keystrokes, enter `set local_echo` at the Telnet prompt before you open the connection to the switcher.

With local echo turned on, keystrokes and the switcher responses are displayed on the same line.

**Example:** `1*1!In1 Out1 All,`

where `1*1!` is the SIS command and `In1 Out1 All` is the response.

Note that all keystrokes are displayed, even those that should be masked, such as the password entry. For example, when entering a password with local echo turned on, you see a display such as `a*d*m*i*n*`, where `admin` is the keyed-in password and `*****` is the masked response.

Local echo can be turned off by entering `unset local_echo` at the Telnet prompt. If your computer is connected to the DXP switcher, and you need to access the Telnet prompt to turn local echo off, enter the `Escape` sequence (<Ctrl + J>).

### **Setting carriage return-line feed**

Unless commanded otherwise, Telnet transmits a line feed character only (no carriage return) to the connected switcher when you press the <Enter> key. This is the correct setting for SIS communication with the switcher. The Telnet `set crlf` command forces Telnet to transmit carriage return and line feed characters when <Enter> is pressed; however, if `crlf` is set, the SIS link with the switcher does not function properly.

### **Closing the link to the switcher**

To close the link to the switcher, access the `Telnet` prompt by entering the escape sequence (<Ctrl + ]>). At the `Telnet` prompt, enter `close`.

### **Help**

For Telnet command definitions, enter `?` at the Telnet prompt.

### **Exiting Telnet (Quit command)**

Exit the Telnet utility by entering `quit` at the Telnet prompt. If you are connected to the DXP switcher, access the Telnet prompt by entering the Escape sequence (<Ctrl + ]>).

## **Subnetting, a Primer**

A subnet is a **subset** of a **network** — a set of IP devices that have portions of their IP addresses in common. It is not the purpose of this manual to describe TCP/IP protocol in detail. However, some understanding of TCP/IP subnetting is necessary in order to understand the interaction of the DXP switcher and the mail server gateway. To understand subnetting at the level required to install and operate the DXP switcher, you must understand the concepts of a gateway, local and remote devices, IP addresses and octets, and subnet masks and octets.

### **Gateways**

The DXP switcher can communicate with the e-mail server that it uses for e-mail notification directly (if they are on the same subnet), or the communication can be routed via a gateway (a computer that provides a link between different subnets).

### **Local and remote devices**

The local and remote devices are defined from the point of view of the function being described. In this guide, subnetting is an issue when you are using the controlling computer to set TCP/IP and e-mail values in the DXP switcher (see “[IP Setup](#)” on page 77 and “[Email Settings Page](#)” on page 109). When you are setting up the variables for e-mail notification, the matrix switcher is the local device and the e-mail server is the remote device.

### **IP addresses and octets**

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric sub-fields, called “octets,” which are separated by dots (periods) (figure **119**). Each octet can be numbered from 000 through 255. Leading zeros, up to three digits total per octet, are optional. Values of 256 and above are invalid.

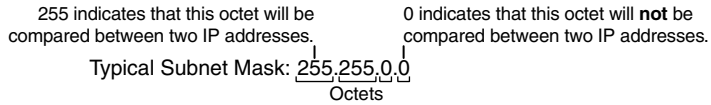
Typical IP Address: 192,168,254,254  
Octets

**Figure 119. IP Address and Octets**



## Subnet masks and octets

The subnet mask (figure 120) is used to determine whether the local and remote devices are on the same subnet or different subnets. The subnet mask consists of four numeric octets separated by dots. Each octet can be numbered from 000 through 255. Leading zeros, up to three digits total per octet, are optional. Each octet typically contains either 255 or 0. The octets determine whether or not the same octets of two IP addresses will be compared when determining if two devices are on the same subnet.



**Figure 120. Subnet Mask and Octets**

## Determining whether devices are on the same subnet

To determine the subnet, the local device IP address is compared to the remote device IP address (see figure 121, below). The octets of each address are compared or not, depending on the value in the related subnet mask octet.

- If a subnet mask octet contains the value 255, the related octets of the local device address and the remote device IP address are unmasked.

**Unmasked octets are compared** (indicated by ? in figure 121).

- If the subnet mask octet contains the value 0, the related octets of the local device and remote device IP addresses are masked.

**Masked octets are not compared** (indicated by *n* in figure 121).

If the unmasked octets of the two IP addresses **match** (indicated by = in example 1 of the figure below), the two addresses **are on the same subnet**.

If the two unmasked fields **do not match** (indicated by an unequal sign in the figure below, examples 2 and 3), the addresses **are not on the same subnet**.

	Example 1	Example 2	Example 3
Local IP Address:	192.168.254.254	192.168.254.254	192.168.254.254
Subnet Mask:	255.255.0.0 (??.X.X)	255.255.0.0 (??.X.X)	255.255.0.0 (??.X.X)
Remote IP Address:	<u>192.168.2.25</u>	<u>190.190.2.25</u>	<u>192.190.2.25</u>
Match?:	= . = .X.X — <b>Match</b> (Same subnet)	≠ . ≠ .X.X — <b>No match</b> (Different subnet)	= . ≠ .X.X — <b>No match</b> (Different subnet)

**Figure 121. Comparing the IP Addresses**

## Extron Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

**USA, Canada, South America,  
and Central America:**

Extron Electronics  
1001 East Ball Road  
Anaheim, CA 92805  
U.S.A.

**Japan:**

Extron Electronics, Japan  
Kyodo Building, 16 Ichibancho  
Chiyoda-ku, Tokyo 102-0082  
Japan

**Europe and Africa:**

Extron Europe  
Hanzeboulevard 10  
3825 PH Amersfoort  
The Netherlands

**China:**

Extron China  
686 Ronghua Road  
Songjiang District  
Shanghai 201611  
China

**Asia:**

Extron Asia  
135 Joo Seng Road, #04-01  
PM Industrial Bldg.  
Singapore 368363  
Singapore

**Middle East:**

Extron Middle East  
Dubai Airport Free Zone  
F12, PO Box 293666  
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or if modifications were made to the product that were not authorized by Extron.

**NOTE:** If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

**USA:** 714.491.1500  
**Asia:** 65.6383.4400

**Europe:** 31.33.453.4040  
**Japan:** 81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

<b>Extron Headquarters</b> +1.800.633.9876 (Inside USA/Canada Only) Extron USA - West +1.714.491.1500 +1.714.491.1517 FAX	<b>Extron Europe</b> +800.3987.6673 (Inside Europe Only) +31.33.453.4040 +31.33.453.4050 FAX	<b>Extron Asia</b> +800.7339.8766 (Inside Asia Only) +65.6383.4400 +65.6383.4664 FAX	<b>Extron Japan</b> +81.3.3511.7655 +81.3.3511.7656 FAX	<b>Extron China</b> +4000.398766 Inside China Only +86.21.3760.1568 +86.21.3760.1568 FAX	<b>Extron Middle East</b> +971.4.2991800 +971.4.2991880 FAX	<b>Extron Korea</b> +82.2.3444.1571 +82.2.3444.1575 FAX	<b>Extron India</b> 1800.3070.3777 Inside India Only +91.80.3055.3777 +91.80.3055.3737 FAX
---	--	--	---	--	---	---	--